APPENDIX A: KINEMATIC DISTANCES

Here we present kinematic distances, with ambiguity resolutions through HI Self-Absorption.

Table A1. Distance assignments of 6668-MHz methanol masers, not discussed in Green & McClure-Griffiths (2011). All the sources are referenced as: [1]Green et al. (2012), [2]Caswell et al. (2010), [3]Breen et al. (2015), references therein. HISA class designations are (Green & McClure-Griffiths 2011): a - best HISA distance assignments meeting criteria discussed in text; b - HISA distance assignments not meeting all the criteria; x - sources for which we were unable to determine HISA; c - direct association with a continuum source; o - velocity or longitude implies outer Galaxy source; t - velocity results in tangent point distance. All kinematic distances are calculated using a flat rotation curve with θ of 246 $\mathrm{km\,s^{-1}}$ and $R_\odot$ of 8.4 kpc. The mid-point LSR velocity of the maser is used after it has been corrected for the best estimates of the solar motion: $U_\odot = 11.1\,\mathrm{km\,s^{-1}}$, $V_\odot = 12.2\,\mathrm{km\,s^{-1}}$, $W_\odot = 7.25\,\mathrm{km\,s^{-1}}$ (Reid et al. 2009; McMillan & Binney 2010; Schönrich et al. 2010). Where distance resolutions have been made previously in the literature they are listed (last column): [CAS]Caswell et al. (1975); [KUC]Kuchar & Bania (1994); [KAW]Kawamura et al. (1998); [ARA]Araya et al. (2002); [KOL]Kolpak et al. (2003); [FIS]Fish et al. (2003); [MEN]Menten et al. (2007); [REI1]Reid et al. (2009); [REI2]Reid et al. (2009); [ZHA1]Zhang et al. (2009); [AND]Anderson & Bania (2009); [ROM] Roman-Duval et al. (2009); [RYG]Rygl et al. (2010); [NII]Niinuma et al. (2011); [RUS]Russeil et al. (2011); [ZHA2]Zhang et al. (2013); [SAT]Sato et al. (2014); [WU]Wu et al. (2014). We have ignored resolutions from the literature labelled as 'tangent point'. References prefixed with an 'A' are astrometric distances. For sources with astrometric parallax distances, only the parallax measurement is referenced. The kinematic distance errors are calculated from the uncertainties in the velocities and include a systematic error of $\pm 7\,\mathrm{km\,s^{-1}}$ as detailed in Reid et al. (2009). For the purposes of the current work the 3-kpc arm sources are arbitrarily positioned on a circle of radius 3.4 kpc from the Galactic centre. V_p is the velocity of the peak emission feature and V_m is the mid-point of the velocity range over which emission is seen.

6668-MHz methanol maser l b (° °)	V_p (kms^{-1})	V_m (kms^{-1})	HISA		Source Status	Dist. (kpc)	Error (kpc)	(kpc)	Previous Allocation
188.794+1.031[1]	−5.5	−5.0	–	o	Outer Galaxy, Literature	2.0	0.1	−0.1	2[NII]
188.946+0.886[1]	10.8	3.5	–	o	Outer Galaxy, Literature	2.1	0.0	−0.0	A[REI2]
189.030+0.783[1]	8.9	9.2	–	o	Outer Galaxy, Literature	2.0	1.0	−1.0	2[KAW]
189.471−1.216[1]	18.8	19.0	–	o	Outer Galaxy, Literature	2.0	1.0	−1.0	2[KAW]
189.778+0.345[1]	5.7	4.0	–	o	Outer Galaxy, Literature	2.0	1.0	−1.0	2[KAW]
192.600−0.048[1]	4.6	3.5	–	o	Outer Galaxy, Literature	1.6	0.1	−0.1	A[RYG]
196.454−1.677[1]	15.2	14.8	–	o	Outer Galaxy, Literature	5.3	0.2	−0.2	A[HON]
206.542−16.355[1]	12.3	12.3	–	o	Outer Galaxy, Literature	0.4	0.0	−0.0	A[MEN]
208.996−19.386[1]	7.3	7.5	–	o	Outer Galaxy, Literature	0.4	0.0	−0.0	A[MEN]
209.016−19.398[1]	−1.5	−1.0	–	o	Outer Galaxy, Literature	0.4	0.0	−0.0	A[MEN]
212.067−0.750[1]	44.4	45.8	–	o	Outer Galaxy	5.2	1.3	−1.1	
213.705−12.597[1]	10.7	11.0	–	o	Outer Galaxy, Literature	0.4	0.0	−0.0	A[MEN]
232.620+0.996[1]	22.9	21.5	–	o	Outer Galaxy, Literature	1.7	0.1	−0.1	A[REI2]
254.880+0.451[1]	30.1	30.3	–	o	Outer Galaxy	3.2	0.6	−0.6	
259.939−0.041[1]	−1.0	−1.0	–	o	Outer Galaxy	*0.4*	*1.0*	*−0.4*	
263.250+0.514[1]	12.3	14.3	–	o	Outer Galaxy	2.5	0.7	−0.8	
264.140+2.018[1]	8.1	8.3	–	o	Outer Galaxy	1.9	0.8	−1.0	
264.289+1.469[1]	8.7	7.8	–	o	Outer Galaxy	1.9	0.8	−1.0	
269.153−1.128[1]	16.0	12.0	–	o	Outer Galaxy	3.0	0.7	−0.9	
269.456−1.467[1]	56.1	55.0	–	o	Outer Galaxy	7.0	0.6	−0.6	
269.658−1.270[1]	16.2	15.3	–	o	Outer Galaxy	3.4	0.7	−0.8	
281.710−1.104[1]	0.9	1.8	–	o	Outer Galaxy	4.1	0.8	−0.8	
284.694−0.361[1]	13.3	13.0	–	o	Outer Galaxy	6.0	0.6	−0.7	
286.383−1.834[1]	9.6	9.3	–	o	Outer Galaxy	6.1	0.6	−0.7	
290.374+1.661[1]	−24.2	−25.0							
290.411−2.915[1]	−16.0	−16.0							
291.642−0.546[1]	12.1	12.0	–	o	Outer Galaxy	7.6	0.6	−0.6	
291.879−0.810[1]	33.5	32.3	–	o	Outer Galaxy	9.3	0.6	−0.6	
292.074−1.131[1]	−19.1	−19.0	F	b	HISA Far	4.2	1.1	−1.1	
292.468+0.168[1]	10.9	16.0	–	o	Outer Galaxy	8.1	0.6	−0.6	
293.723−1.742[1]	24.2	24.5	–	o	Outer Galaxy	9.1	0.6	−0.6	
294.337−1.706[1]	−11.7	−11.8	–	x	Latitude Near	*0.8*	*0.7*	*−0.7*	
294.511−1.621[1]	−11.9	−9.0	–	x	Latitude Near	*0.6*	*6.5*	*−0.8*	
294.977−1.734[1]	−5.3	−6.0	–	x	Latitude Near	*0.3*	*7.2*	*−0.7*	
294.990−1.719[1]	−12.3	−12.3	–	x	Latitude Near	*0.9*	*0.7*	*−0.7*	
297.406−0.622[1]	27.8	27.0	–	o	Outer Galaxy	10.1	0.6	−0.6	
298.177−0.795[1]	23.5	25.3	–	o	Outer Galaxy	10.2	0.6	−0.6	
298.632−0.362[1]	38.7	41.0	–	o	Outer Galaxy	11.6	0.6	−0.6	
298.723−0.086[1]	23.5	19.5	–	o	Outer Galaxy	9.9	0.6	−0.6	
299.772−0.005[1]	−6.8	−5.0	F	b	HISA Far	8.2	0.6	−0.6	
302.034+0.625[1]	−39.1	−44.3							
302.455−0.741[1]	32.6	35.0	–	o	Outer Galaxy	12.0	0.6	−0.6	
303.507−0.721[1]	14.2	14.5	–	o	Outer Galaxy	10.6	0.5	−0.5	
303.846−0.363[1]	25.4	27.8	–	o	Outer Galaxy	11.7	0.6	−0.6	
303.869+0.194[1]	−36.9	−36.8	N	b	HISA Near	2.9	0.7	−0.7	

Table A1. cont.

6668-MHz methanol maser l b (° °)	V_p (kms^{-1})	V_m (kms^{-1})	HISA		Source Status	Dist. (kpc)	Error (kpc)	(kpc)	Previous Allocation
304.367−0.336[1]	32.7	32.0	–	o	Outer Galaxy	12.2	0.6	−0.6	
304.887+0.635[1]	−35.1	−35.0	N	b	HISA Near	2.8	0.6	−0.6	
305.475−0.096[1]	−39.0	−40.8	N	b	HISA Near	3.1	0.7	−0.7	
305.573−0.342[1]	−51.0	−52.5	–	t	Tangent	4.9	1.7	−1.7	
305.615−0.344[1]	−34.9	−31.3	N	b	HISA Near	2.2	0.7	−0.7	
305.634+1.645[1]	−54.8	−56.0	–	t	Tangent	4.9	1.7	−1.7	
305.646+1.589[1]	−58.1	−57.5	–	t	Tangent	4.9	1.7	−1.7	
305.822−0.115[1]	−42.2	−42.7	N	b	HISA Near	3.3	0.8	−0.8	
305.940−0.164[1]	−50.9	−50.8	–	t	Tangent	4.9	1.7	−1.7	
307.132−0.476[1]	−34.0	−34.8	N	a	HISA Near	2.4	0.6	−0.6	
307.133−0.477[1]	−38.7	−38.0	N	a	HISA Near	2.6	0.7	−0.6	
308.056−0.396[1]	−11.8	−11.3	N	b	HISA Near	0.6	0.5	−0.5	
308.075−0.411[1]	−7.5	−7.5	N	b	HISA Near	*0.3*	*10.2*	*−0.5*	
308.651−0.507[1]	3.2	2.0	–	o	Outer Galaxy	*10.8*	*0.5*	*−0.5*	
308.686+0.530[1]	−53.1	−49.0	F	a	HISA Far	7.0	0.7	−0.7	
308.715−0.216[1]	−12.5	−14.0	F	b	HISA Far	9.7	0.5	−0.5	
309.901+0.231[1]	−54.6	−54.5	F	a	HISA Far	6.8	0.7	−0.7	
311.230−0.032[1]	24.8	25.5	–	o	Outer Galaxy	13.2	0.6	−0.6	
311.551−0.055[1]	−56.3	−56.3	N	a	HISA Near	3.9	0.7	−0.7	
311.729−0.735[1]	30.9	28.5	–	o	Outer Galaxy	13.6	0.7	−0.6	
312.071+0.082[1]	−34.8	−30.0	N	a	HISA Near	1.8	0.5	−0.5	
312.307+0.661[1]	−12.3	−12.3	N	b	HISA Near	0.6	0.5	−0.5	
312.501−0.084[1]	21.8	23.0	–	o	Outer Galaxy	13.3	0.6	−0.6	
312.698+0.126[1]	29.5	31.3	–	o	Outer Galaxy	14.0	0.6	−0.6	
312.702−0.087[1]	−58.2	−57.3	N	a	HISA Near	3.8	0.6	−0.6	
313.994−0.084[1]	−4.9	−5.5	N	a	HISA Near	*0.2*	*11.8*	*−0.5*	
314.221+0.273[1]	−61.6	−61.5	N	b	HISA Near	4.0	0.6	−0.6	
315.803−0.575[1]	8.2	8.3	–	o	Outer Galaxy	*12.8*	*0.5*	*−0.5*	
316.484−0.310[1]	−15.6	−13.5	N	a	HISA Near	0.7	0.4	−0.5	
317.029+0.361[1]	−47.9	−48.8	N	a	HISA Near	2.9	0.5	−0.4	
317.061+0.256[1]	−43.7	−44.0	N	a	HISA Near	2.6	0.4	−0.4	
318.472−0.214[1]	−19.1	−19.4	N	a	HISA Near	1.1	0.4	−0.4	
319.163−0.421[1]	−21.1	−17.5	N	b	HISA Near	1.0	0.4	−0.5	
320.244−0.562[1]	−49.7	−49.8	N	a	HISA Near	2.9	0.4	−0.4	
320.285−0.308[1]	−69.0	−69.0	F	b	HISA Far	8.9	0.4	−0.5	
320.414+0.109[1]	−13.4	−13.8	N	a	HISA Near	0.7	0.4	−0.5	
320.424+0.089[1]	−8.0	−7.0	N	a	HISA Near	*0.3*	*12.8*	*−0.5*	
320.625+0.098[1]	−7.6	−7.3	N	a	HISA Near	*0.3*	*12.8*	*−0.5*	
320.780+0.248[1]	−5.1	−7.5	N	a	HISA Near	*0.3*	*12.8*	*−0.5*	
321.704+1.168[1]									
322.705−0.331[1]	−21.6	−22.5	N	a	HISA Near	1.3	0.4	−0.4	
323.476+0.695[1]	−43.6	−44.0	F	b	HISA Far	11.8	0.4	−0.4	
323.766−1.370[1]	46.6	48.5	–	o	Outer Galaxy	18.7	1.1	−1.0	
323.793−0.397[1]	−22.7	−24.0	N	b	HISA Near	1.4	0.4	−0.4	
323.799+0.017[1]	−56.2	−57.8	N	a	HISA Near	3.3	0.4	−0.4	
324.789−0.378[1]	11.8	12.0	–	o	Outer Galaxy	14.9	0.6	−0.6	
324.915+0.158[1]	−2.3	−3.0	F	b	HISA Far	13.7	0.5	−0.5	
325.659−0.022[1]	29.4	29.6	–	o	Outer Galaxy	16.8	0.8	−0.8	
326.323−0.393[1]	−69.4	−73.3	N	a	HISA Near	4.0	0.4	−0.4	
326.448−0.748[1]	−71.7	−65.3	N	a	HISA Near	3.6	0.3	−0.3	
326.608+0.799[1]	−45.2	−45.0	N	a	HISA Near	2.6	0.4	−0.4	
326.986−0.031[1]	−60.7	−63.3	N	b	HISA Near	3.5	0.3	−0.3	
327.282−0.469[1]	0.0	0.0	–	x		–	–	–	
327.395+0.197[1]	−89.5	−89.0	N	b	HISA Near	4.5	0.4	−0.3	
327.566−0.850[1]	−29.7	−26.0	N	a	HISA Near	1.6	0.4	−0.4	
327.710−0.394[1]	−78.0	−76.0	N	a	HISA Near	4.1	0.3	−0.3	
327.808−0.634[1]	−42.3	−42.3	N	a	HISA Near	2.5	0.4	−0.4	
327.863+0.098[1]	−46.3	−45.8	N	a	HISA Near	2.7	0.4	−0.4	
328.140−0.432[1]	−39.2	−38.3	N	a	HISA Near	2.3	0.4	−0.4	
328.164+0.587[1]	−91.9	−91.2	N	b	HISA Near	4.9	0.4	−0.3	
328.385+0.131[1]	29.0	29.0	–	o	Outer Galaxy	17.3	0.9	−0.8	

Table A1. cont.

6668-MHz methanol maser l b (° °)	V_p (kms^{-1})	V_m (kms^{-1})	HISA		Source Status	Dist. (kpc)	Error (kpc)	(kpc)	Previous Allocation
328.819+1.704[1]	−85.3	−80.3	–	x		–	–	–	
328.940+0.558[1]	−98.8	−93.0	N	a	HISA Near	4.9	0.4	−0.3	
328.942+0.565[1]	−90.9	−92.5	N	a	HISA Near	4.9	0.4	−0.3	
329.272+0.115[1]	−72.0	−71.8	N	b	HISA Near	3.9	0.3	−0.3	
329.341−0.644[1]	−81.4	−81.5	N	a	HISA Near	4.4	0.3	−0.3	
329.526+0.216[1]	−92.8	−93.0	F	b	HISA Far	9.6	0.3	−0.3	
329.556+0.181[1]	−109.0	−107.0	F	a	HISA Far	8.9	0.4	−0.4	
329.719+1.164[1]	−75.8	−77.8	F	b	HISA Far	10.3	0.3	−0.3	
332.295+2.280	−24.0	−23.5	–	–	Latitude Near				
358.263−2.061[2]	4.9	3.3	–	x			–	–	
358.371−0.468[2]	1.2	6.0	–	x			–	–	
358.386−0.483[2]	−6.0	−6.0	–	x			–	–	
358.460−0.391[2]	1.2	1.8	–	x			–	–	
358.460−0.393[2]	−7.5	−1.3	–	x			–	–	
358.721−0.126[2]	10.5	11.3	–	x			–	–	
358.809−0.085[2]	−56.2	−55.4	–	x	3-kpc arm	5.0	–	–	
358.841−0.737[2]	−20.6	−23.5	–	x			–	–	
358.906+0.106[2]	−18.1	−18.5	–	x			–	–	
358.931−0.030[2]	−15.9	−18.3	–	x			–	–	
358.980+0.084[2]	6.2	6.0	–	x			–	–	
359.138+0.031[2]	−3.9	−3.0	–	x			–	–	
359.436−0.104[2]	−46.7	−49.0	–	x	3-kpc arm	5.0	–	–	
359.436−0.102[2]	−53.6	−56.0	–	x	3-kpc arm	5.0	–	–	
359.615−0.243[2]	22.6	20.5	–	x			–	–	
359.938+0.170[2]	−0.5	−0.7	–	x			–	–	
359.970−0.457[2]	23.8	22.1	–	x			–	–	
0.092−0.663[2]	23.5	17.5	–	x			–	–	
0.167−0.446[2]	13.8	13.3	–	x			–	–	
0.212−0.001[2]	49.3	45.8	–	x			–	–	
0.315−0.201[2]	19.4	20.5	–	x			–	–	
0.316−0.201[2]	21.0	21.0	–	x			–	–	
0.376+0.040[2]	37.0	37.5	–	x			–	–	
0.409−0.504[2]	25.3	25.8	–	x			–	–	
0.475−0.010[2]	28.8	27.0	–	x			–	–	
0.496+0.188[2]	0.8	−5.0	–	x			–	–	
0.546−0.852[2]	11.8	14.0	–	x			–	–	
0.645−0.042[2]	49.5	49.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.647−0.055[2]	51.0	50.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.651−0.049[2]	48.0	47.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.657−0.041[2]	49.9	52.0	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.665−0.036[2]	60.4	60.0	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.666−0.029[2]	70.0	70.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.667−0.034[2]	55.0	52.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.672−0.031[2]	58.2	57.0	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.673−0.029[2]	66.0	66.0	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.677−0.025[2]	73.3	73.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.695−0.038[2]	68.6	69.5	–	x	Literature	7.9	0.8	−0.7	A[REI1]
0.836+0.184[2]	3.6	3.5	–	x			–	–	
1.008−0.237[2]	1.6	4.0	–	x			–	–	
1.147−0.124[2]	−15.3	−17.2	–	x			–	–	
1.329+0.150[2]	−12.0	−12.2	–	x			–	–	
1.719−0.088[2]	−8.0	−6.8	–	x			–	–	
2.143+0.009[2]	62.7	59.5	–	x	3-kpc arm	11.8	–	–	
2.521−0.220[2]	4.2	−1.3	–	x			–	–	
2.536+0.198[2]	3.2	11.3	–	x			–	–	
2.591−0.029[2]	−8.2	−6.8	–	x			–	–	
2.615+0.134[2]	94.5	98.8	–	x			–	–	
2.703+0.040[2]	93.6	94.8	–	x			–	–	
3.253+0.018[2]	2.2	1.0	–	x			–	–	
3.312−0.399[2]	0.5	5.0	–	x			–	–	
3.442−0.348[2]	−35.0	−35.0	–	x	3-kpc arm	5.0	–	–	

Table A1. cont.

6668-MHz methanol maser			HISA		Source	Dist.	Error		Previous
l b	V$_p$	V$_m$			Status				Allocation
(° °)	(kms^{-1})	(kms^{-1})				(kpc)	(kpc)	(kpc)	
3.502−0.200[2]	43.9	44.3	–	x			–	–	
3.910+0.001[2]	17.9	19.8	–	x			–	–	
4.393+0.079[2]	2.0	4.5	–	x			–	–	
4.434+0.129[2]	−0.9	3.3	–	x			–	–	
4.569−0.079[2]	9.5	9.5	–	x			–	–	
4.586+0.028[2]	26.3	21.0	–	x			–	–	
4.676+0.276[2]	4.4	0.3	–	x			–	–	
4.866−0.171[2]	5.4	5.5	–	x			–	–	
16.864−2.159	15.0	15.0	–	x	Latitude Near	1.5	0.6	−0.7	
17.021−2.403	23.5	23.5	–	x	Latitude Near	2.2	0.5	−0.5	
18.341+1.768	28.1	29.0	–	x	Latitude Near	2.5	0.4	−0.5	
20.239+0.065[3]	70.4	65.3	N	a	HISA Near	4.1	0.3	−0.3	F[ROM]
20.364−0.013[3]	55.9	54.6	N	a	HISA Near	3.7	0.3	−0.3	
20.733−0.059[3]	60.7	59.4	F	b	HISA Far	11.9	0.3	−0.3	F[AND,ROM]
20.926−0.050[3]	27.4	26.6	N	a	HISA Near	2.1	0.4	−0.5	F[AND],N[ROM]
20.963−0.075[3]	34.6	34.2	F	b	HISA Far	13.1	0.4	−0.4	F[AND]
21.023−0.063[3]	31.1	31.9	N	a	HISA Near	2.4	0.4	−0.4	
21.848−0.240[3]	81.9	82.6	N	a	HISA Near	4.7	0.3	−0.3	N[ROM]
23.003+0.124[3]	110.5	111.6	N	b	HISA Near	5.6	0.3	−0.2	F[AND],N[ROM]
23.126+0.395[3]	13.8	17.2	N	a	HISA Near	1.4	0.5	−0.5	
23.365−0.291[3]	82.5	81.4	N	a	HISA Near	4.6	0.3	−0.3	N[ROM]
23.389+0.185[3]	75.4	74.8	N	b	HISA Near	4.3	0.3	−0.3	
23.901+0.077[3]	35.7	33.6	N	a	HISA Near	2.4	0.4	−0.4	F[AND],N[ROM]
23.986−0.089[3]	65.1	65.5	F	b	HISA Far	11.5	0.3	−0.3	F[AND],N[ROM]
23.996−0.100[3]	68.2	67.3	F	a	HISA Far	11.4	0.3	−0.3	F[AND],N[ROM]
24.461+0.198[3]	125.5	119.4	F	b	HISA Far	9.4	0.3	−0.3	F[AND]
25.226+0.288[3]	42.0	42.0	N	a	HISA Near	2.8	0.4	−0.4	F[AND],N[ROM]
25.407−0.170[3]	60.8	61.0	N	b	HISA Near	3.6	0.3	−0.3	F[AND],N[ROM,KOL]
25.494+0.062[3]	103.8	99.6	F	a	HISA Far	10.0	0.3	−0.3	
25.613+0.226[3]	110.1	111.2	F	a	HISA Far	9.5	0.3	−0.3	
25.838−0.378[3]	−1.6	−1.5	–	o	Outer Galaxy	*15.3*	*0.7*	*−0.6*	
25.920−0.141[3]	114.8	113.3	N	a	HISA	5.7	0.3	−0.3	
26.422+1.685[3]	31.0	29.5	–	x	Latitude Near	2.0	0.4	−0.4	
26.545+0.423[3]	82.5	82.5	F	b	HISA Far	10.5	0.3	−0.3	F[AND,ROM,KOL]
27.011−0.039[3]	−18.3	−19.9	–	o	Outer Galaxy	17.1	0.9	−0.8	
27.500+0.107[3]	87.3	83.9	N	b	HISA Near	4.5	0.3	−0.3	F[RUS]
27.757+0.050[3]	99.2	98.9	N	b	HISA Near	5.2	0.3	−0.3	F[RUS]
28.321−0.011[3]	104.8	101.5	N	b	HISA Near	5.3	0.3	−0.3	N[AND]
28.523+0.127[3]	39.6	39.3	N	a	HISA Near	2.5	0.4	−0.4	
28.608+0.018[3]	106.4	103.8	F	b	HISA Far	9.4	0.3	−0.3	F[AND,KOL]
28.687−0.283[3]	92.3	91.3	N	a	HISA Near	4.9	0.3	−0.3	N[RUS,AND]
28.861+0.065[3]	105.3	105.1	N	a	HISA Near, Literature	5.5	0.4	−0.3	A[SAT], F[AND]
29.603−0.625[3]	80.5	81.3	N	b	HISA Near	4.4	0.3	−0.3	F[RUS]
29.863−0.044[3]	101.4	102.0	N	b	HISA Near, Literature	6.2	0.9	−0.7	A[SAT]
29.993−0.282[3]	103.2	103.3	N	b	HISA Near	5.4	0.4	−0.3	N[AND]
30.010−0.273[3]	106.1	106.1	N	a	HISA Near	5.6	0.4	−0.4	N[AND]
30.370+0.482[3]	12.4	16.0	F	b	HISA Far	13.4	0.5	−0.4	F[RUS]
30.400−0.296[3]	98.3	101.3	N	b	HISA Near	5.4	0.4	−0.3	
30.423+0.466[3]	7.5	7.1	F	b	HISA Far	14.0	0.5	−0.5	F[RUS,ROM]
30.771−0.804[3]	74.4	75.2	F	a	HISA Far	10.3	0.3	−0.3	F[RUS,ROM]
30.774+0.078[3]	98.4	98.8	N	b	HISA Near	5.3	0.4	−0.3	N[RUS],N[AND]
30.822−0.053[3]	93.2	93.4	N	b	HISA Near	5.0	0.4	−0.3	N[RUS,AND,ROM],F[KOL]
30.851+0.123[3]	27.5	32.5	F	a	HISA Far	12.4	0.4	−0.4	F[RUS,AND]
30.960+0.086[3]	40.1	38.2	F	b	HISA Far	12.0	0.4	−0.4	F[RUS]
30.973+0.562[3]	19.9	20.0	F	b	HISA Far	13.1	0.5	−0.4	
30.980+0.216[3]	111.0	109.5	N	a	HISA Near	5.9	0.4	−0.4	

Table A1. cont.

6668-MHz methanol maser l b (° °)	V_p (kms^{-1})	V_m (kms^{-1})	HISA		Source Status	Dist. (kpc)	Error (kpc)	(kpc)	Previous Allocation
31.076+0.457[3]	25.5	26.2	F	a	HISA Far	12.7	0.4	−0.4	F[RUS,AND]
31.122+0.063[3]	48.0	47.9	N	a	HISA Near	2.9	0.3	−0.4	
31.182−0.148[3]	46.3	47.8	F	a	HISA Far	11.5	0.4	−0.3	F[RUS,AND,ROM]
31.594−0.192[3]	48.3	47.6	F	b	HISA Far	11.5	0.4	−0.3	F[AND]
32.516+0.323[3]	52.5	52.6	F	a	HISA Far	11.1	0.4	−0.3	F[ROM]
32.825−0.328[3]	82.4	82.9	N	a	HISA Near	4.5	0.4	−0.3	N[ROM]
32.914−0.096[3]	103.5	103.7	F	b	HISA Far	8.4	0.5	−0.5	
32.963−0.340[3]	46.7	47.2	N	a	HISA Near	2.8	0.4	−0.4	
33.317−0.360[3]	31.2	28.6	N	b	HISA Near	1.8	0.4	−0.4	
33.486+0.040[3]	121.7	112.9	–	t	Tangent	7.0	1.1	−1.1	
33.634−0.021[3]	103.1	103.5	N	b	HISA Near	5.8	0.5	−0.5	N[ROM]
34.244+0.133[3]	54.9	59.0	–	x	Literature Near	3.4	0.4	−0.4	N[CAS,AND,ROM,KOL,FIS]
34.267−0.210[3]	54.5	51.6	N	b	HISA Near	3.0	0.4	−0.4	
35.200−1.736[3]	44.5	43.2	–	x	Latitude Near, Literature	3.3	0.6	−0.4	A[ZHA1], N[ARA]
37.043−0.035[3]	80.2	82.5	N	b	HISA Near	4.8	0.5	−0.4	N[ROM]
37.430+1.518[3]	41.2	46.5	–	x	Latitude Near, Literature	1.9	0.1	−0.1	A[WU]
38.565+0.538[3]	−28.8	−28.6	–	o	Outer Galaxy	15.6	0.7	−0.7	
40.597−0.719[3]	76.2	74.4	N	b	HISA Near	4.5	0.5	−0.5	
42.13+0.52[3]	−33.3	−33.3	–	o	Outer Galaxy	15.3	0.7	−0.7	
43.171+0.005[3]	18.9	20.3	–	c	Literature Far	11.1	0.8	−0.7	A[ZHA2], F[KOL,AND]
43.175−0.015[3]	12.6	12.5	–	c	Literature Far	11.1	0.8	−0.7	A[ZHA2], F[AND,ROM,FIS]
43.180−0.518[3]	58.9	60.6	–	c	Literature Far	8.5	0.5	−0.5	F[KOL,AND,ROM]
45.380−0.594[3]	53.3	53.3	F	b	HISA Far	8.4	0.5	−0.6	F[ROM]
51.679+0.719[3]	7.3	2.4	F	b	HISA Far	10.4	0.5	−0.5	F[ROM]
51.818+1.250[3]	46.5	46.5	F	b	HISA Far	6.9	0.7	−0.7	
52.199+0.723[3]	3.7	3.1	–	c	Literature Far	10.2	0.5	−0.5	F[KUC,AND,ROM]
56.963−0.235[3]	29.9	30.0	N	a	HISA Near	2.3	0.7	−0.7	
57.610+0.025[3]	38.9	34.6	N	b	HISA Near	2.9	0.8	−0.8	
59.634−0.192[3]	29.6	29.9	–	c	Literature Far	5.9	0.8	−0.8	F[KUC]

Table A2. Adjusted distance assignments of 6668-MHz methanol masers from Green & McClure-Griffiths (2011). V_p is the velocity of the peak emission feature and V_m is the mid-point of the velocity range over which emission is seen.

6668-MHz methanol maser l b (° °)	V_p (kms^{-1})	V_m (kms^{-1})	Dist. (kpc)	Error (kpc)	(kpc)	Details of Adjustment
29.978−0.047	103.0	101.4	5.4	0.4	−0.3	Associated astrometric distance (Zhang et al. 2014)
31.281+0.061	110.4	108.1	5.5	0.4	−0.3	Associated astrometric distance (Zhang et al. 2014)
31.581+0.077	98.9	95.9	5.5	0.4	−0.3	Associated astrometric distance (Zhang et al. 2014)
32.045+0.059	92.9	97.1	5.2	0.2	−0.2	Associated astrometric distance (Sato et al. 2014)
34.396+0.222	55.7	59.3	1.6	0.1	−0.1	Associated astrometric distance (Kurayama et al. 2011)
35.025+0.350	44.4	44.1	2.3	0.2	−0.2	Associated astrometric distance (Wu et al. 2014)
44.310+0.041	55.7	55.9	8.5	0.5	−0.5	Associated astrometric distance (Wu et al. 2014)
44.644−0.516	49.5	49.5	8.9	0.5	−0.5	Associated astrometric distance (Wu et al. 2014)
53.618+0.035	19.0	18.6	1.3	0.5	−0.5	Changed to near allocation on comparison with literature
305.200+0.019	−33.1	−33.8	4.1	1.2	−0.7	Allocated to astrometric distance (Krishnan et al. 2017)
305.202+0.208	−44.0	−44.3	4.1	1.2	−0.7	Allocated to astrometric distance (Krishnan et al. 2017)
305.208+0.206	−38.3	−38.0	4.1	1.2	−0.7	Allocated to astrometric distance (Krishnan et al. 2017)
329.029−0.205	−37.1	−40.9	2.8	0.4	−0.4	Changed to near allocation on comparison with literature
329.031−0.198	−45.5	−40.9	3.0	0.4	−0.4	Changed to near allocation on comparison with literature
329.066−0.308	−43.8	−44.5	2.9	0.4	−0.4	Changed to near allocation on comparison with literature
339.884−1.259	−38.7	−34.3	2.1	0.4	−0.3	Adjusted to astrometric distance (Krishnan et al. 2015)

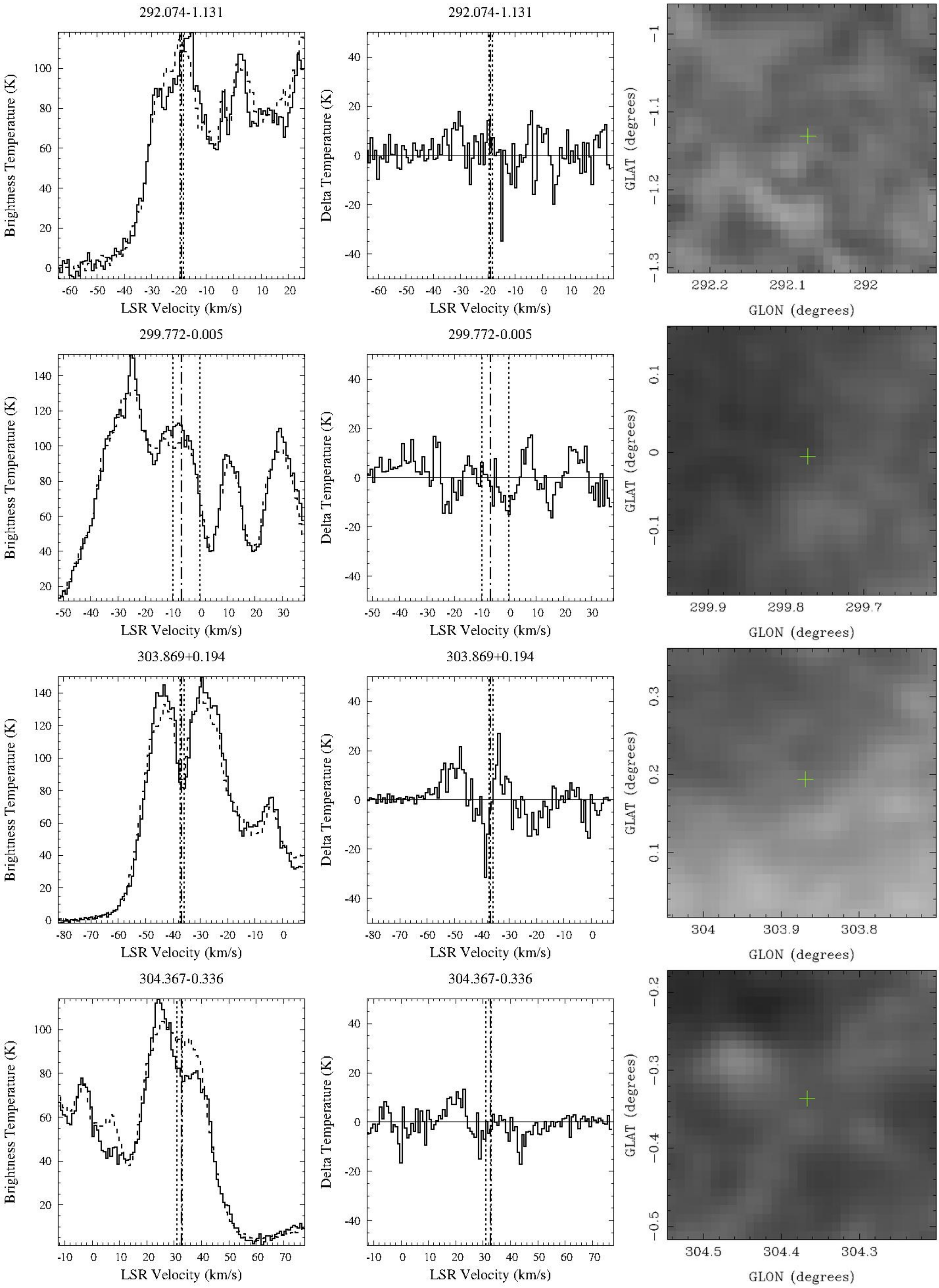
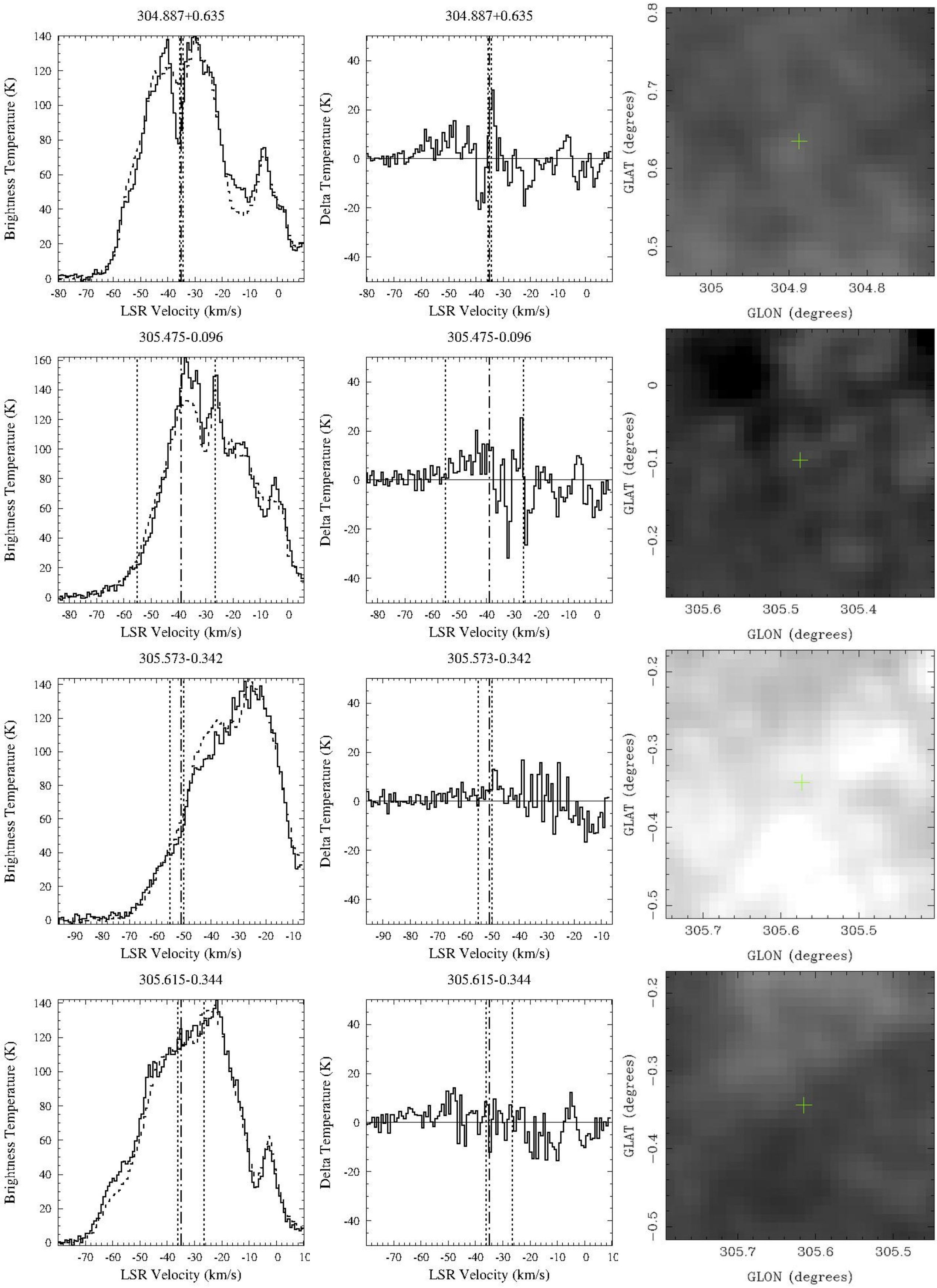


Figure A1. From left to right: H I spectrum on-source (solid) and off-source (dashed); gradient of the velocity of the H I spectrum (temperature change per channel); H I map (grey-scale) centred at the source position. The grey-scale of the map is a linear scale from 0 K (black) to 150 K (white). The broken vertical lines indicate the range of velocity over which maser emission can be detected, and the solid line the velocity of the peak of the maser emission.



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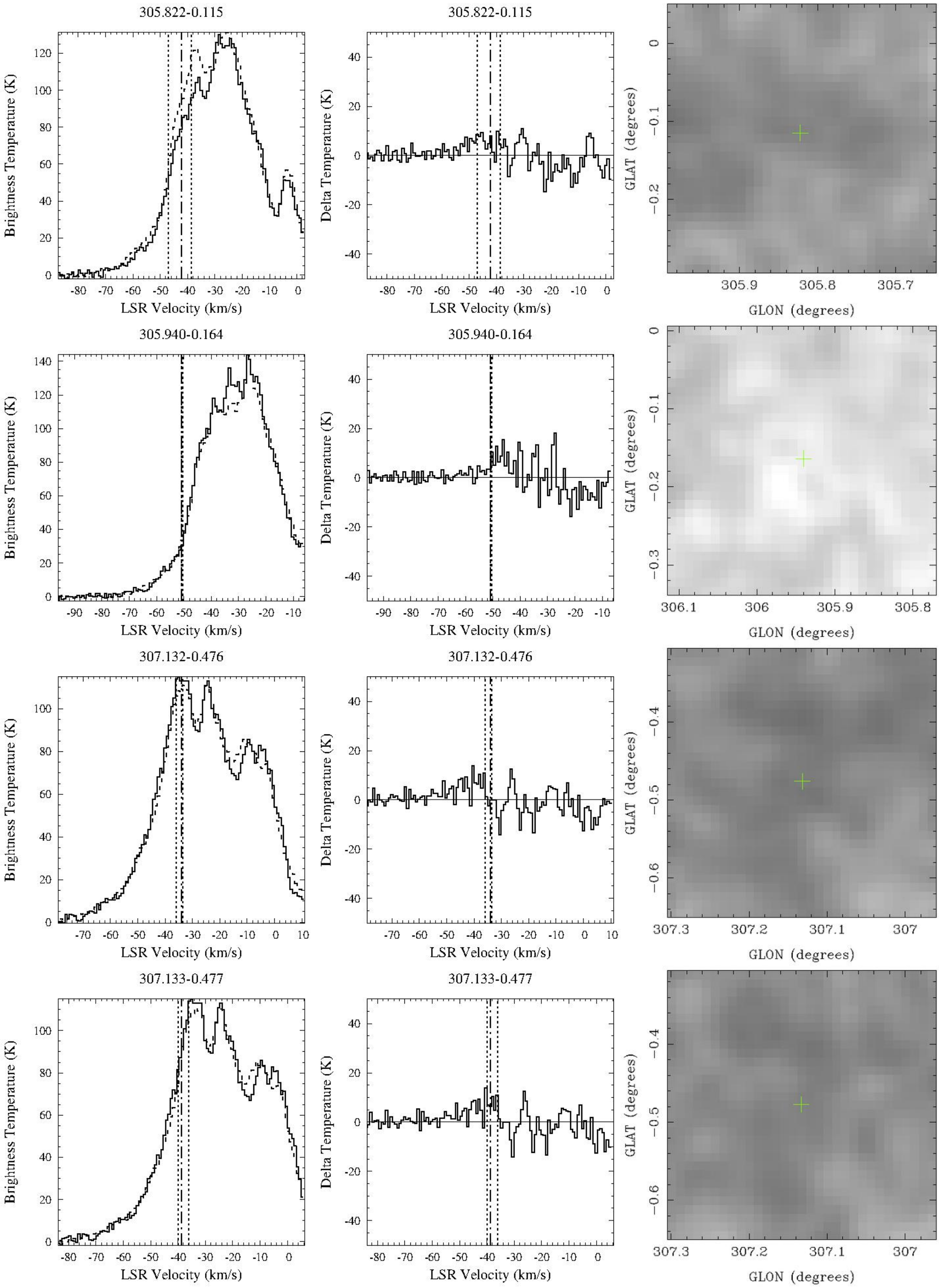

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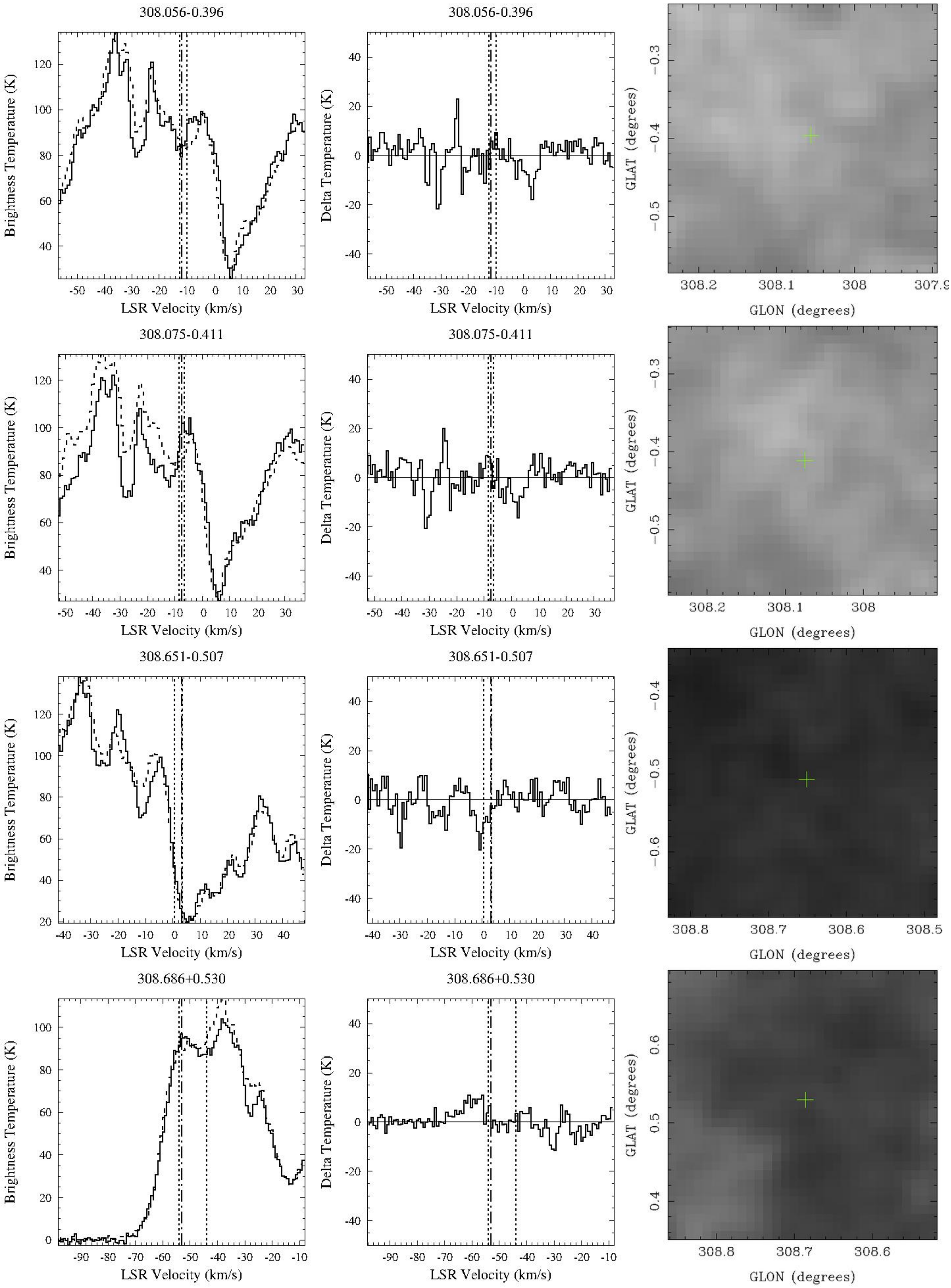

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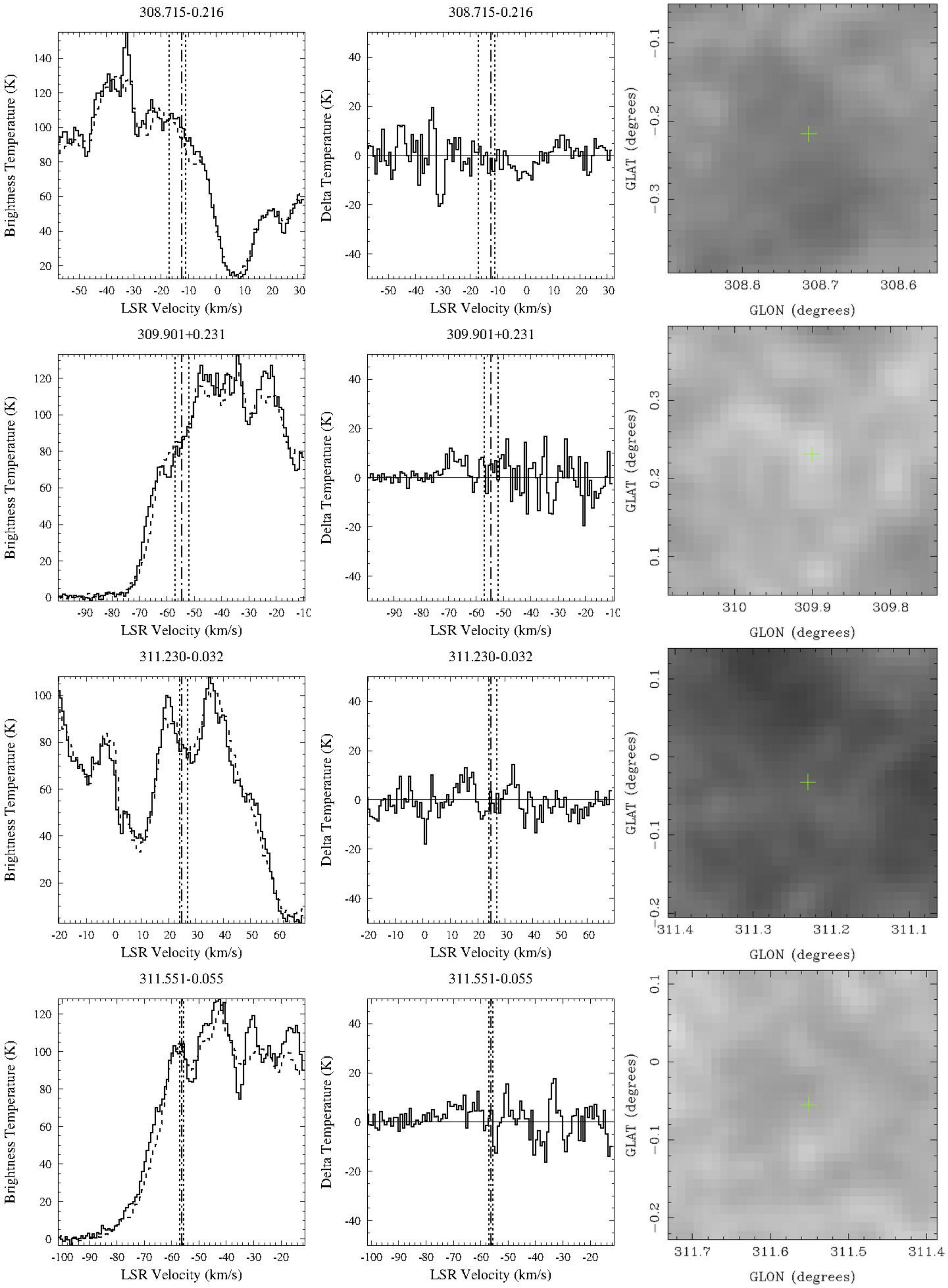

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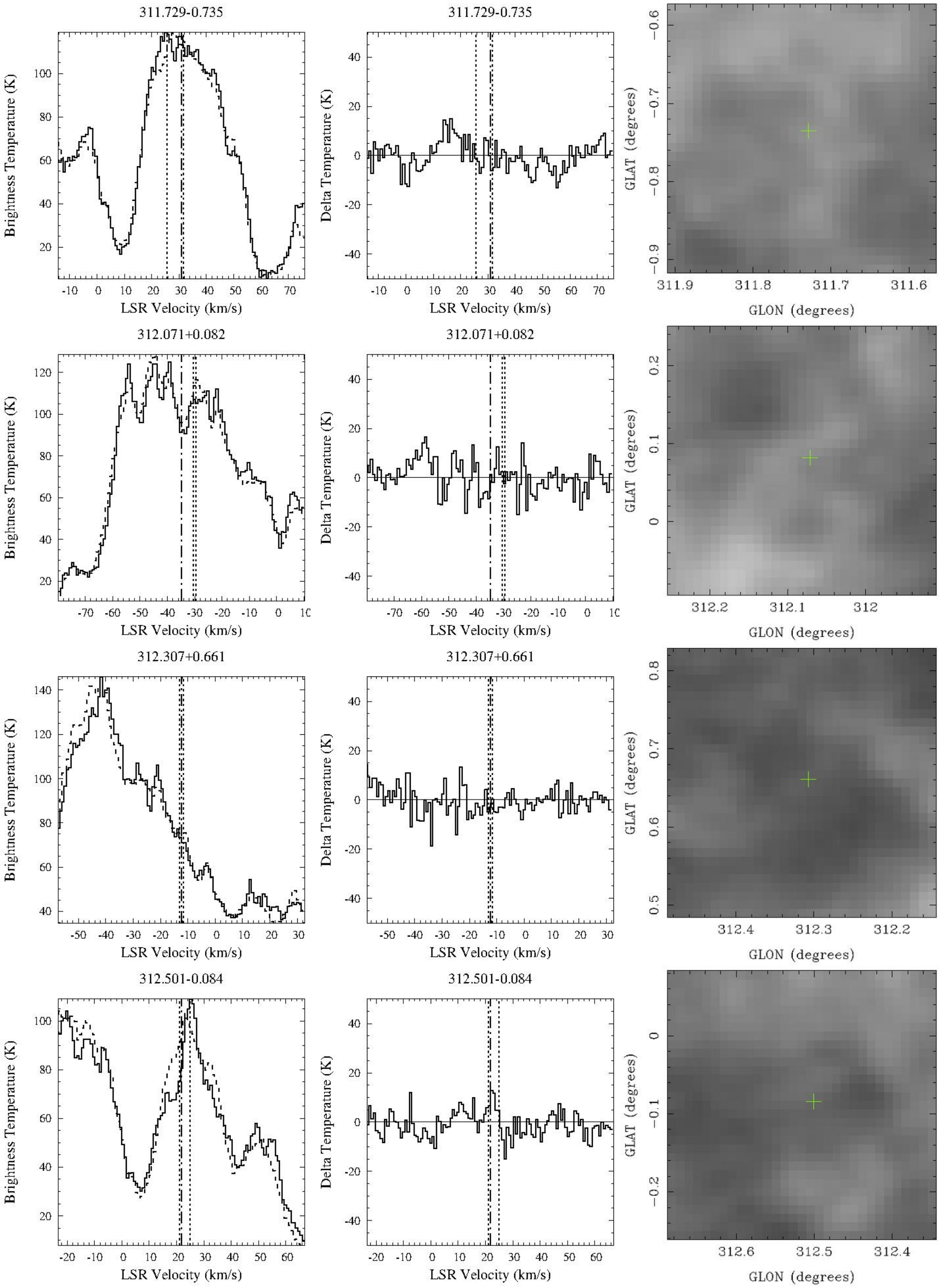

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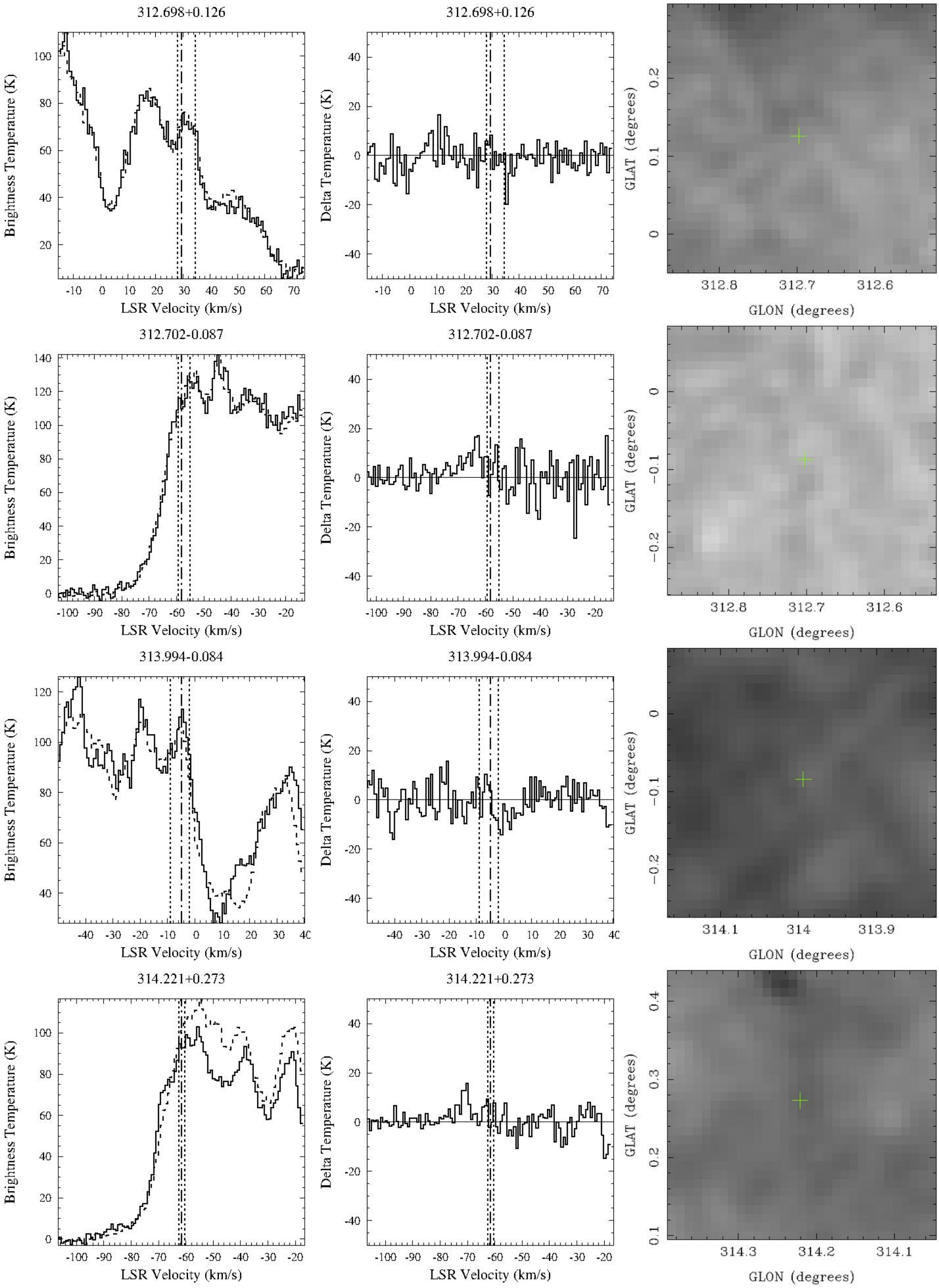

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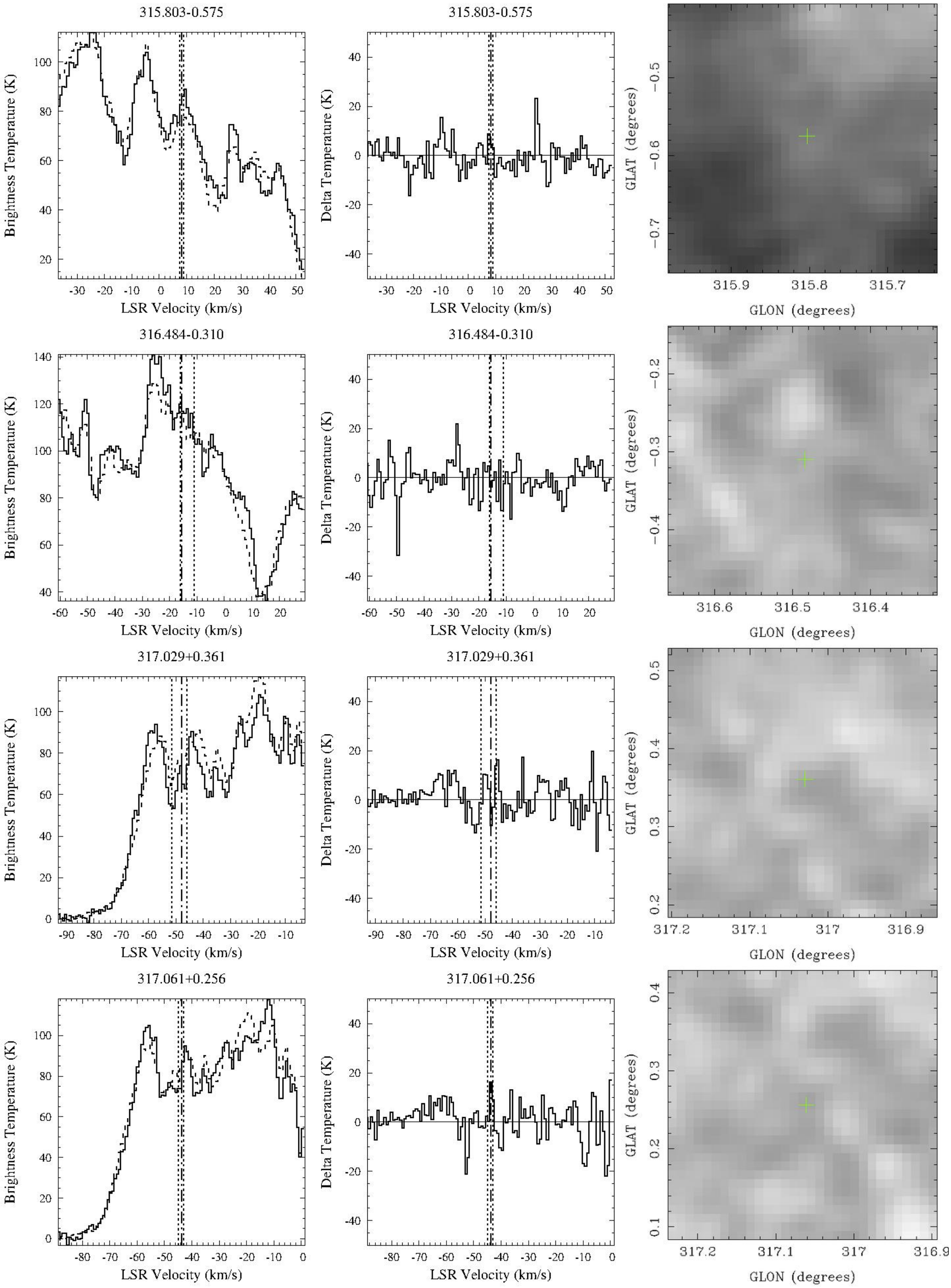

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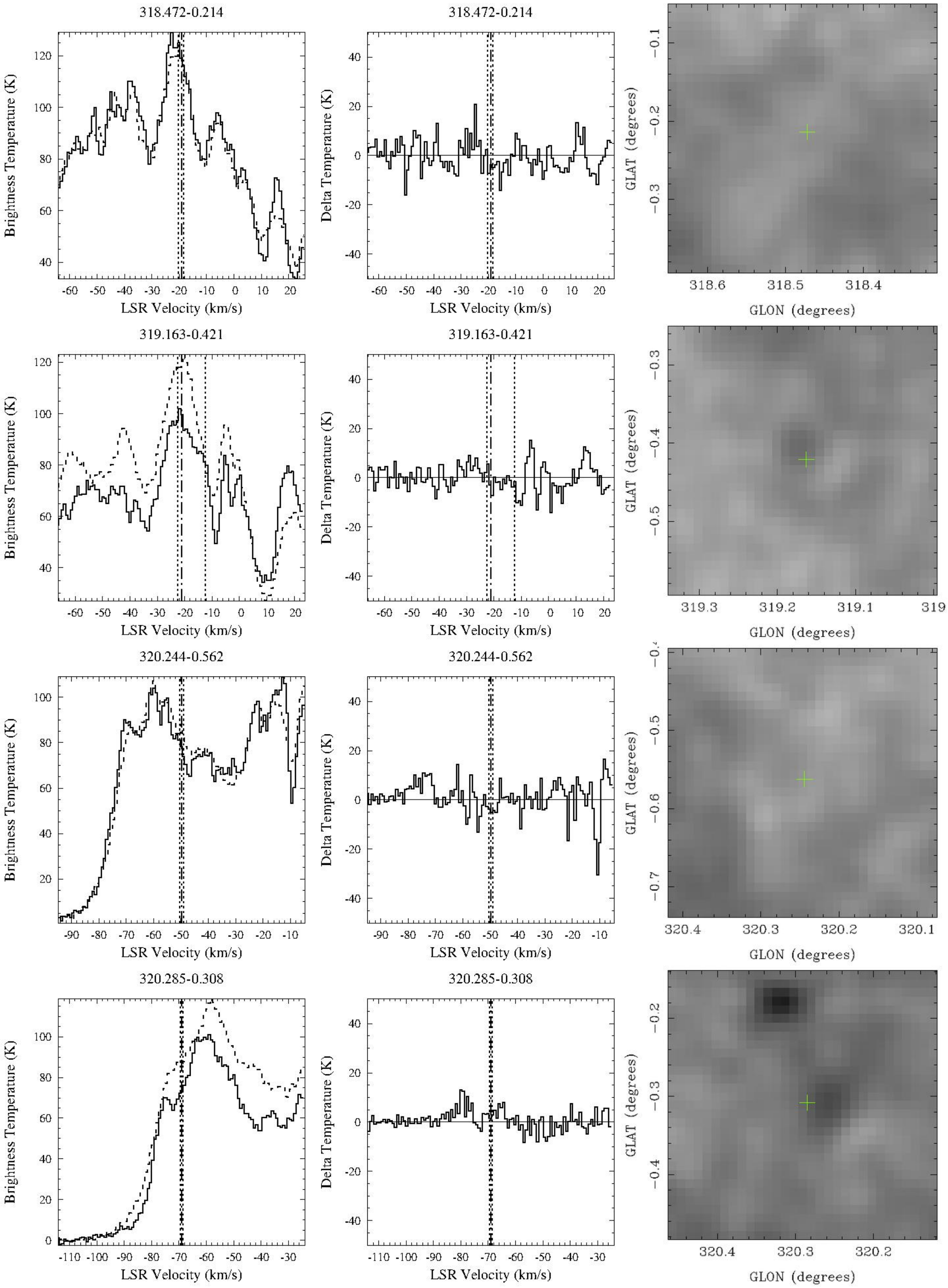

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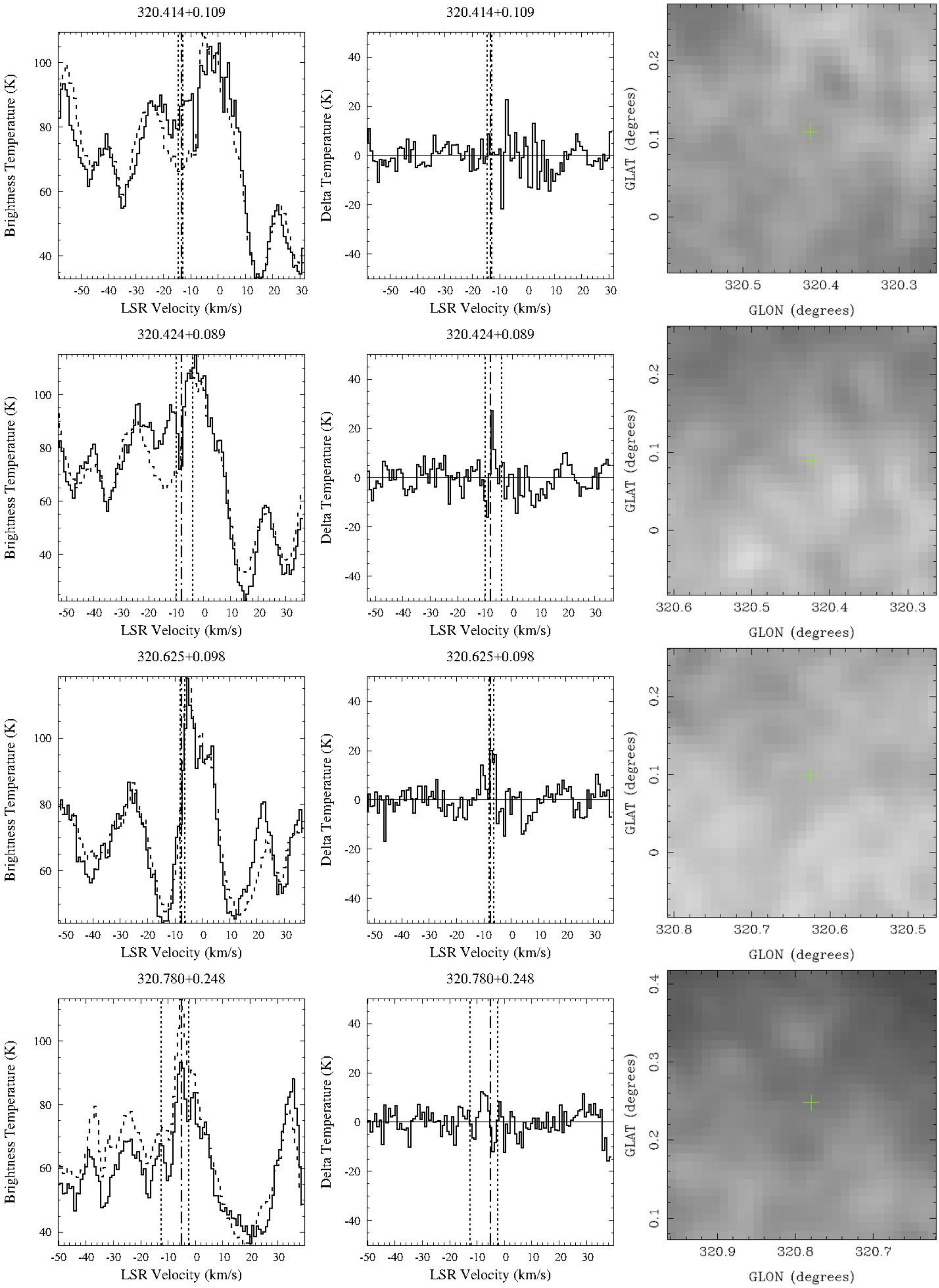

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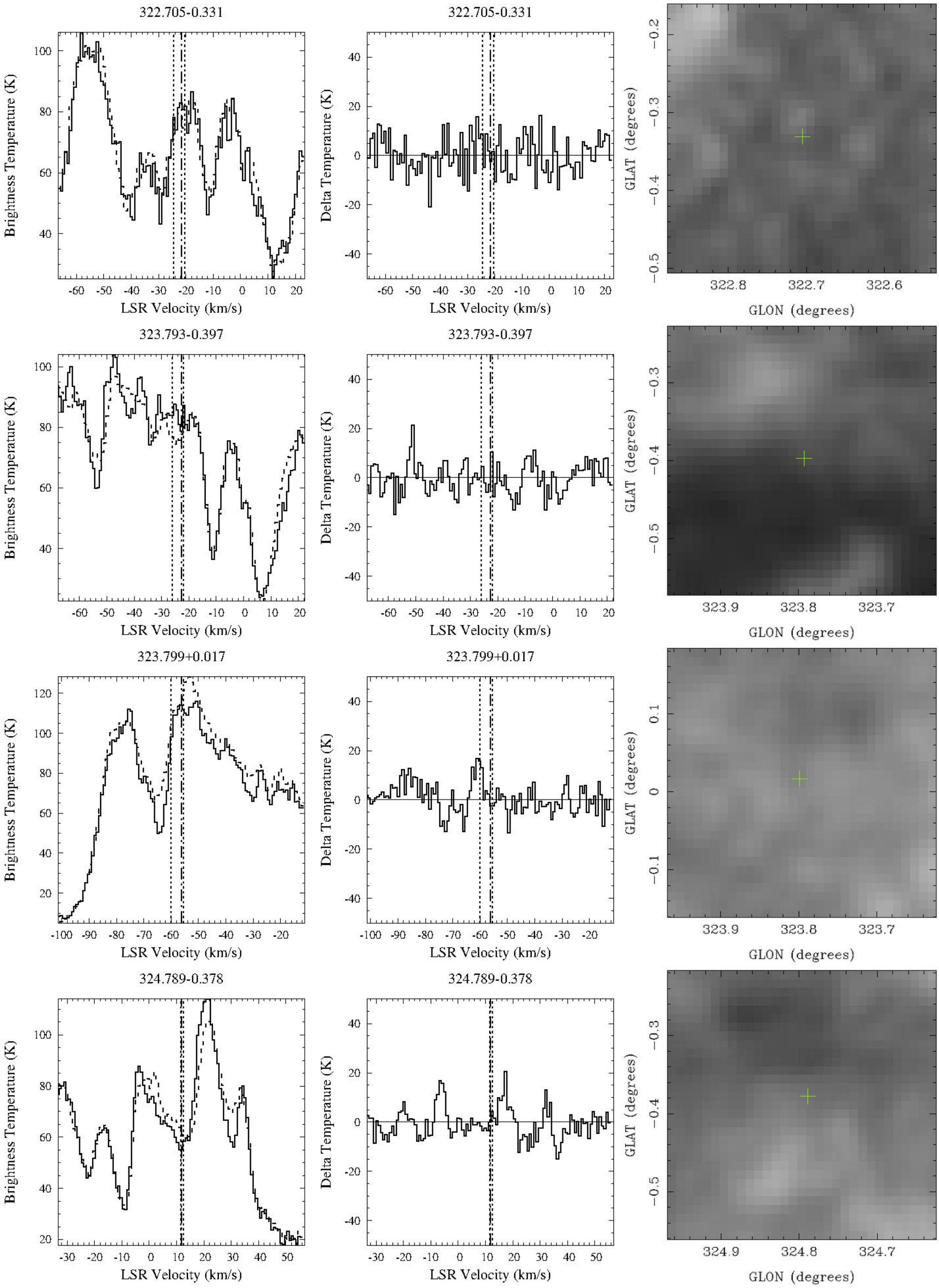

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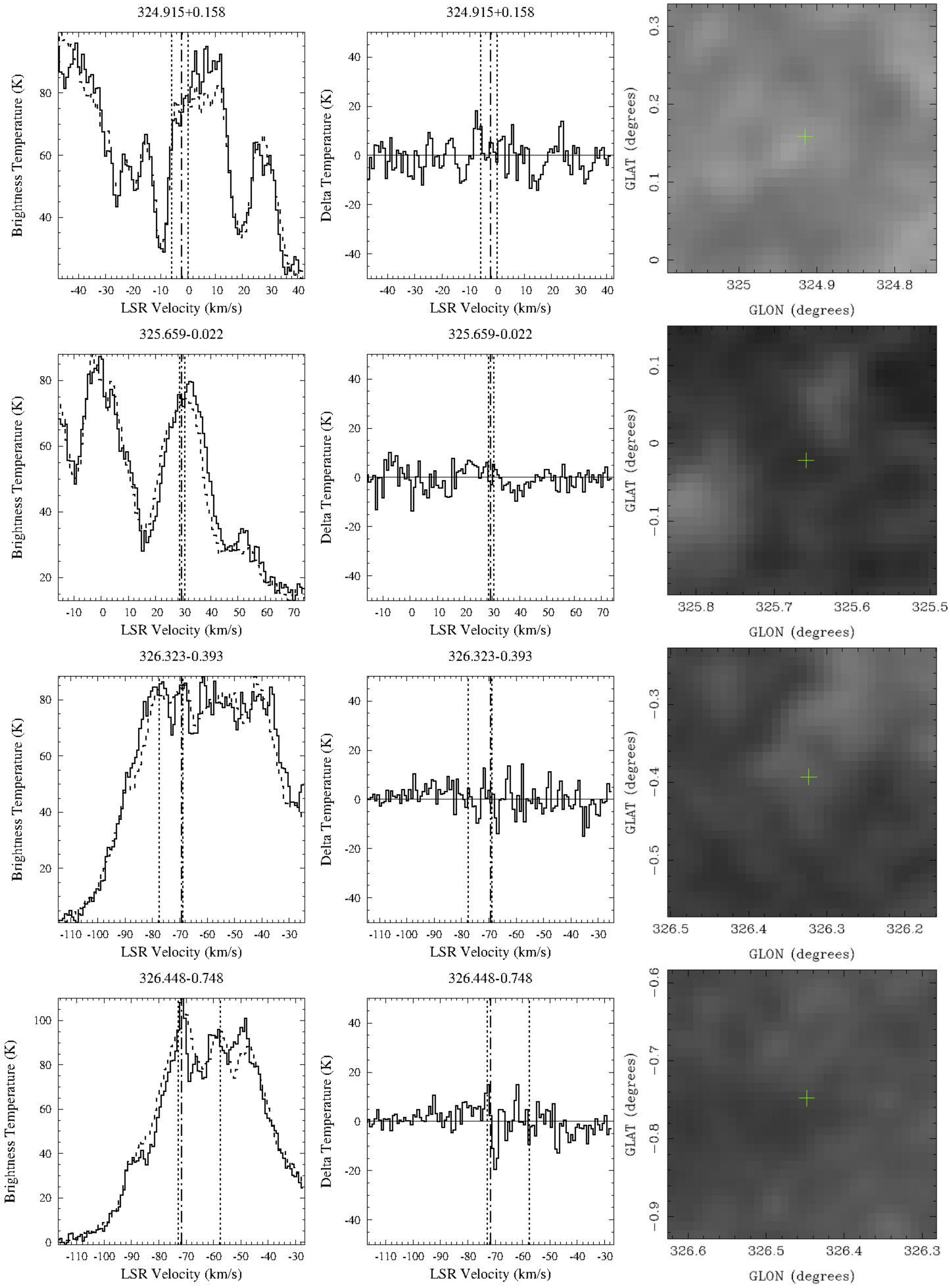

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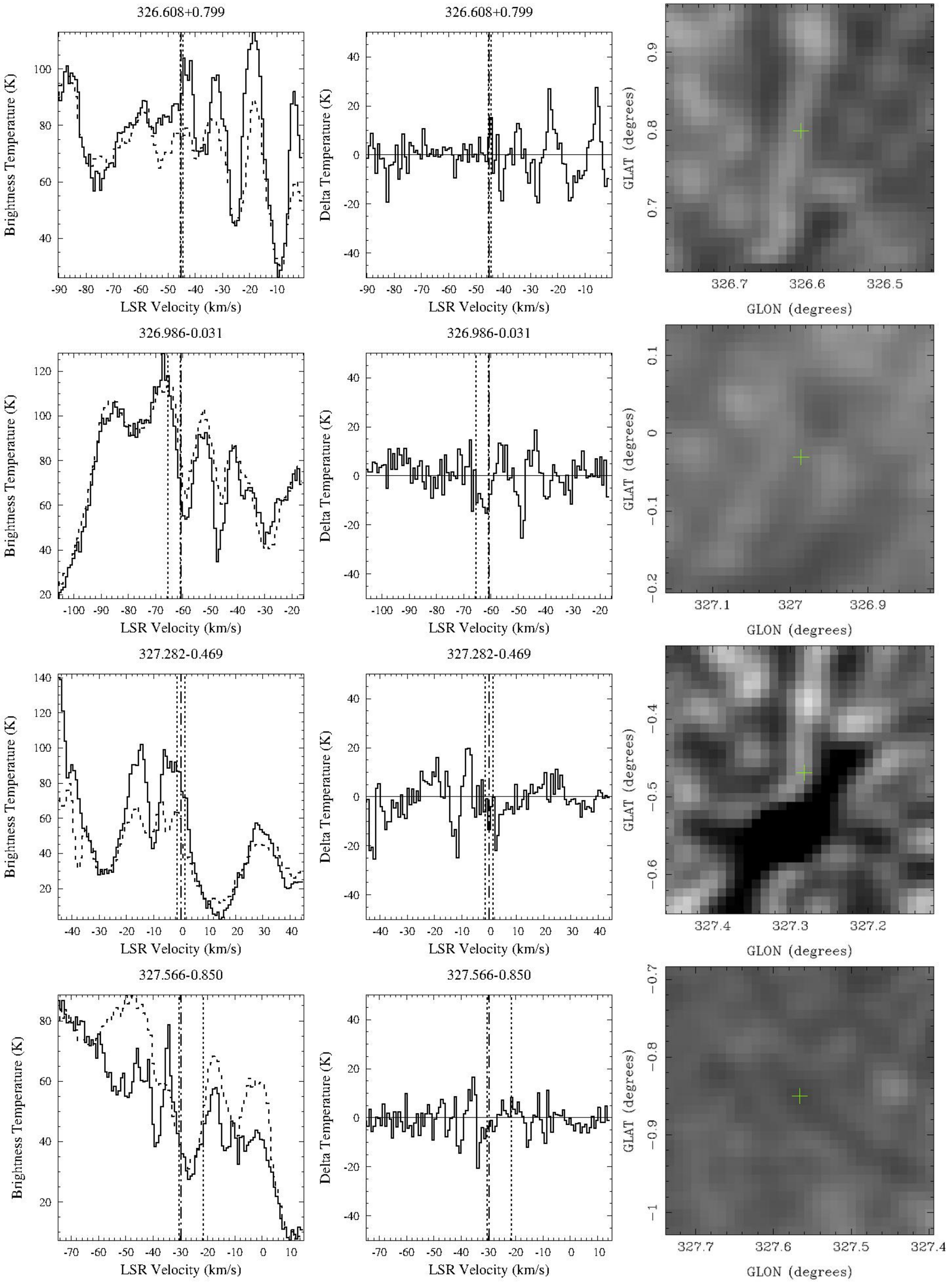

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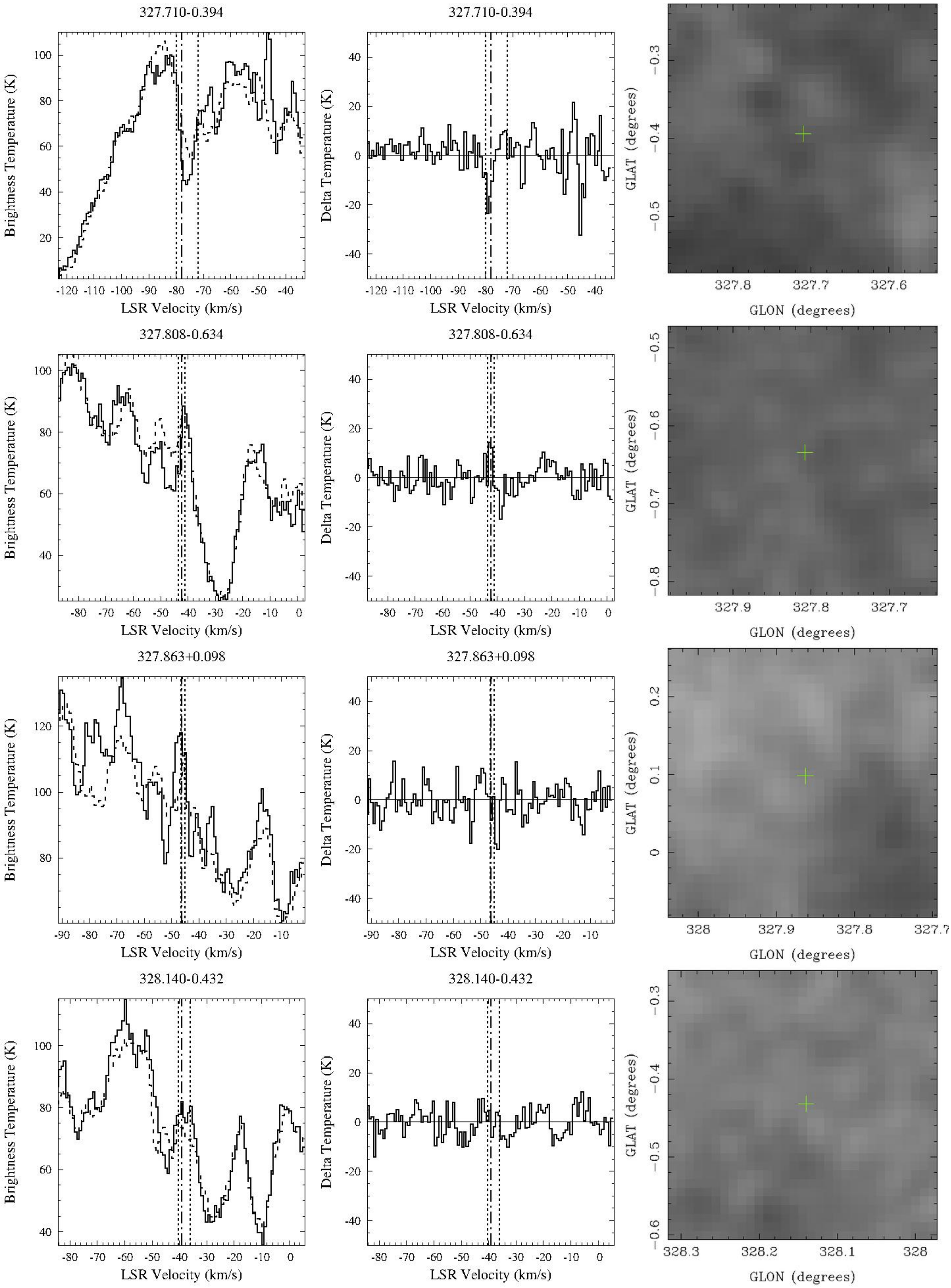

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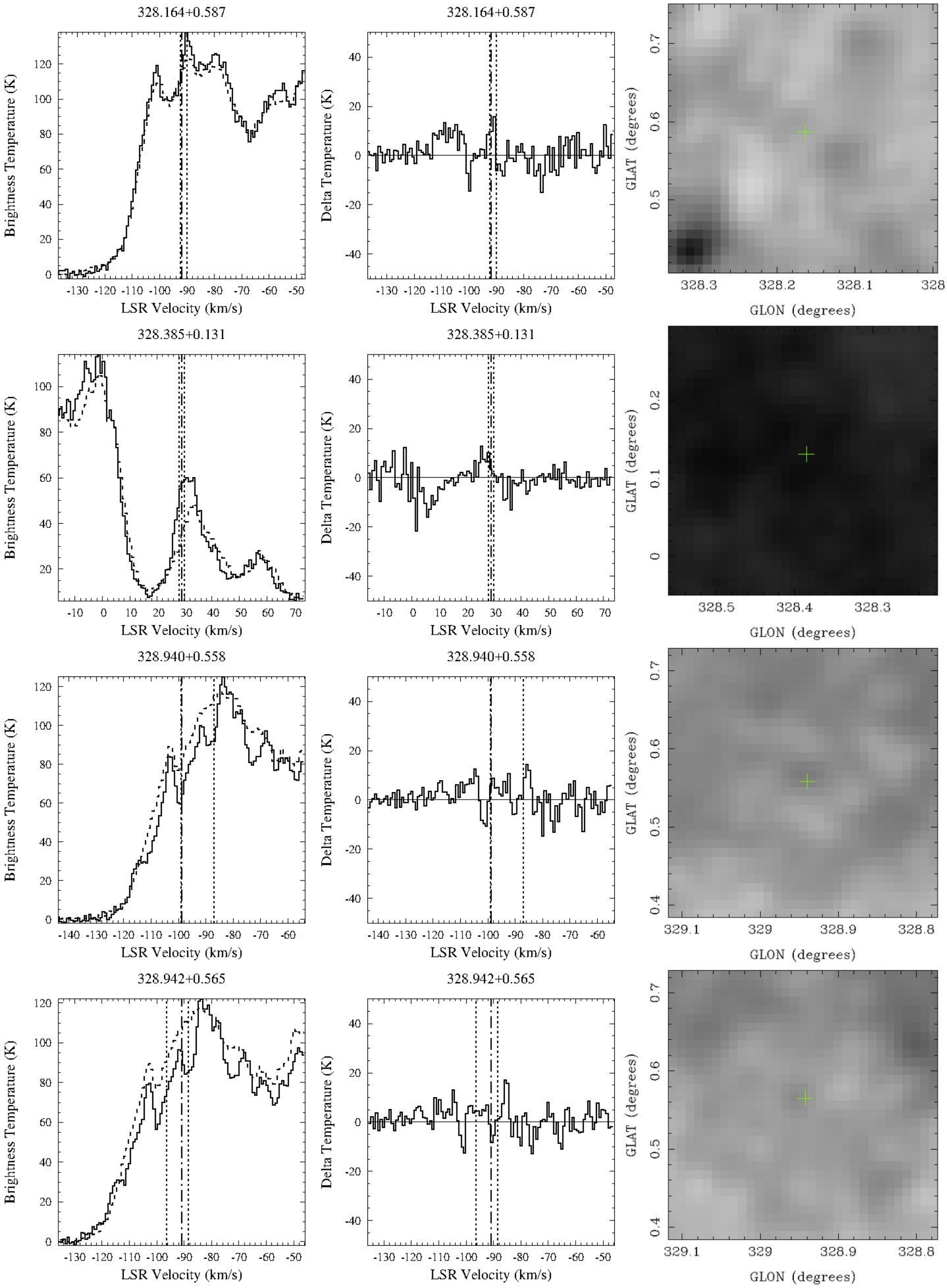

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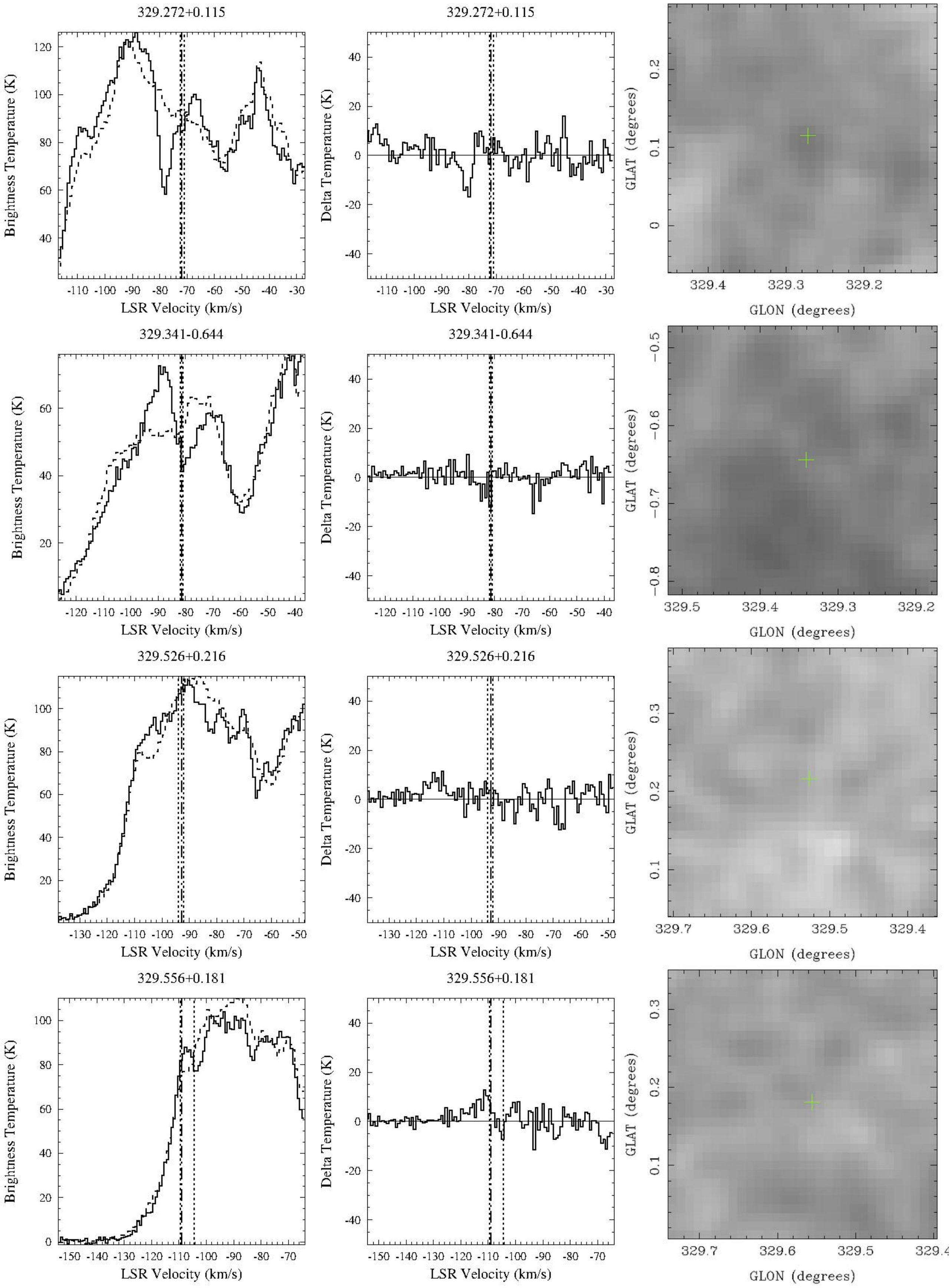

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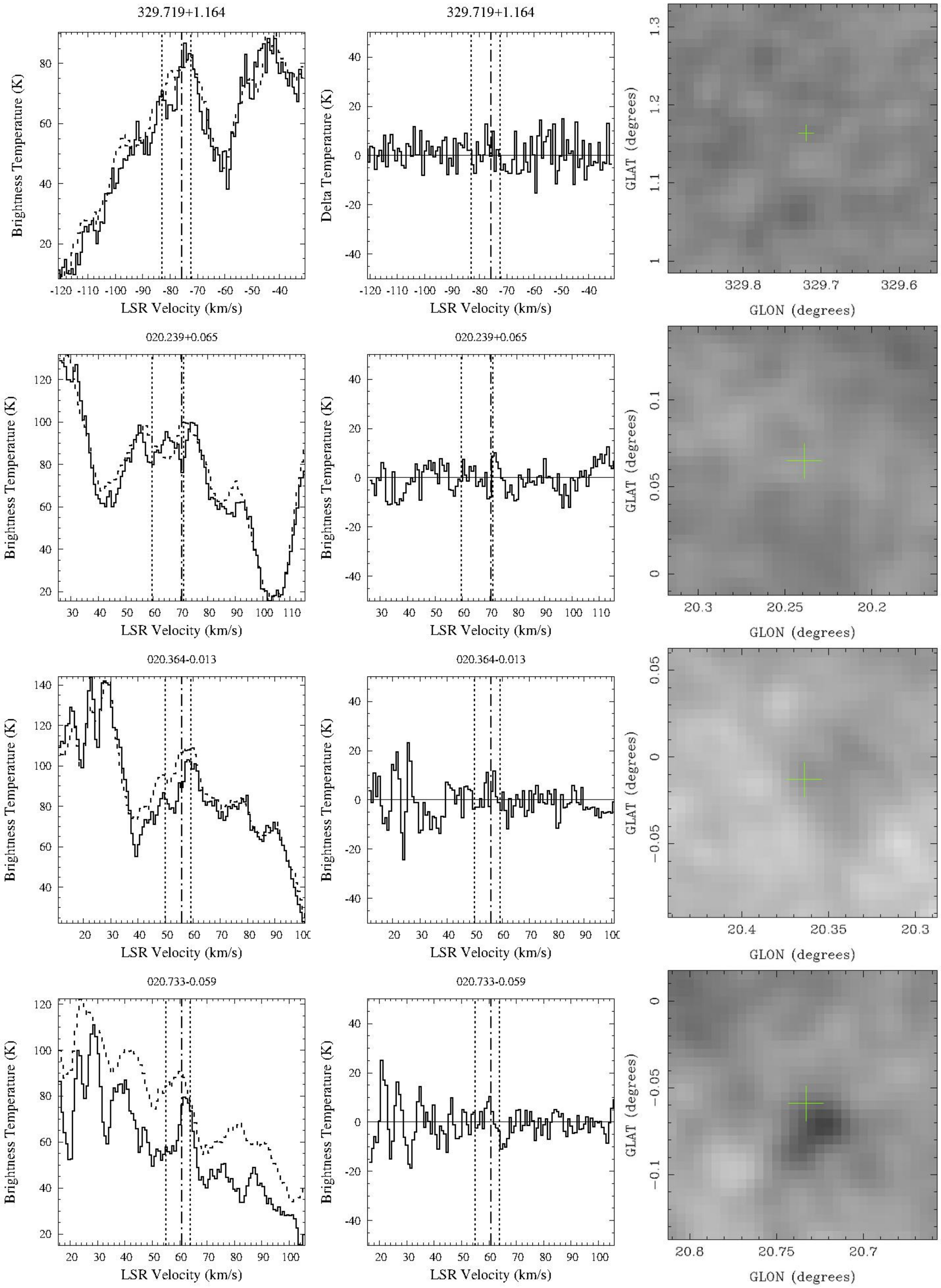

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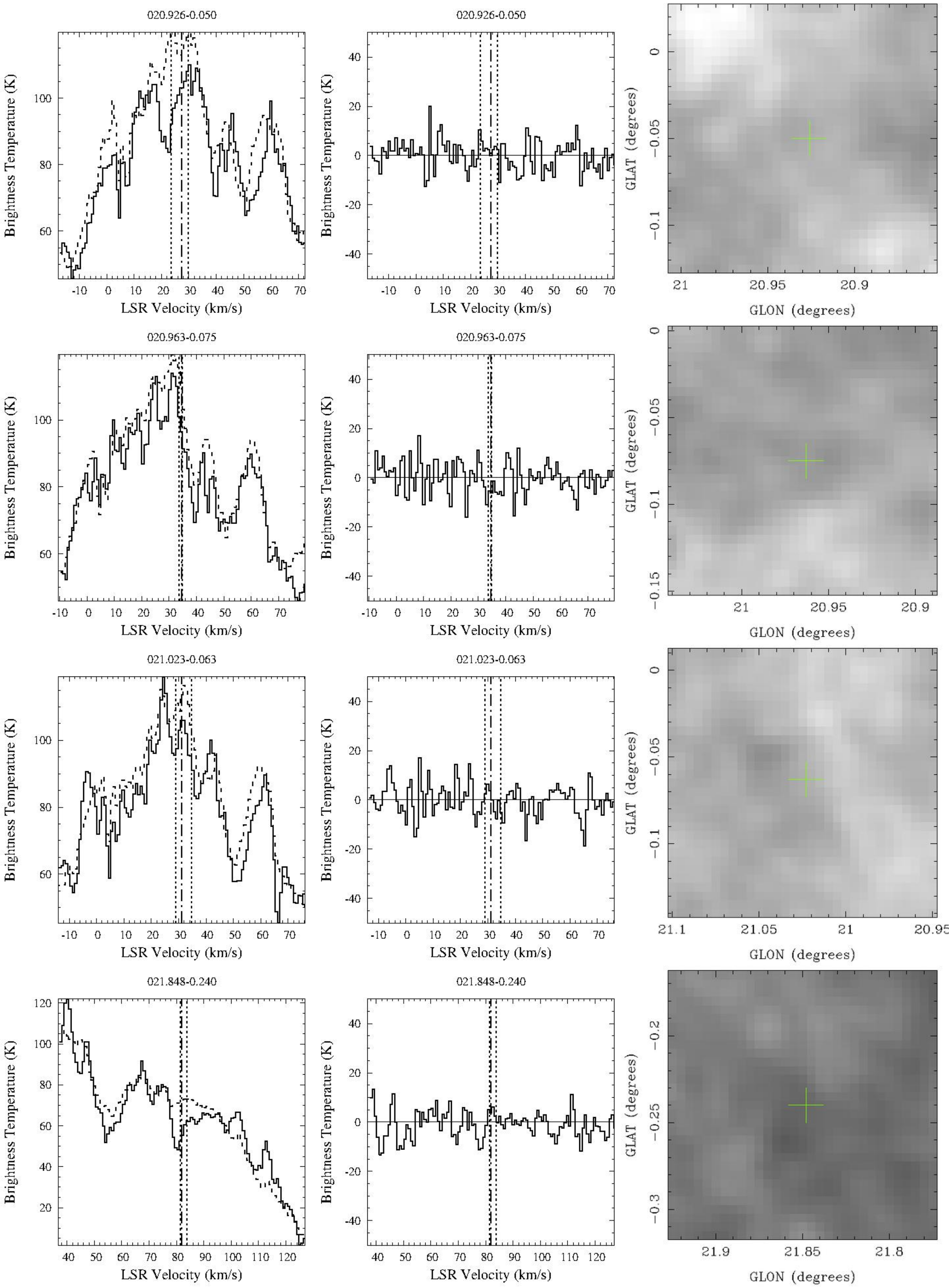

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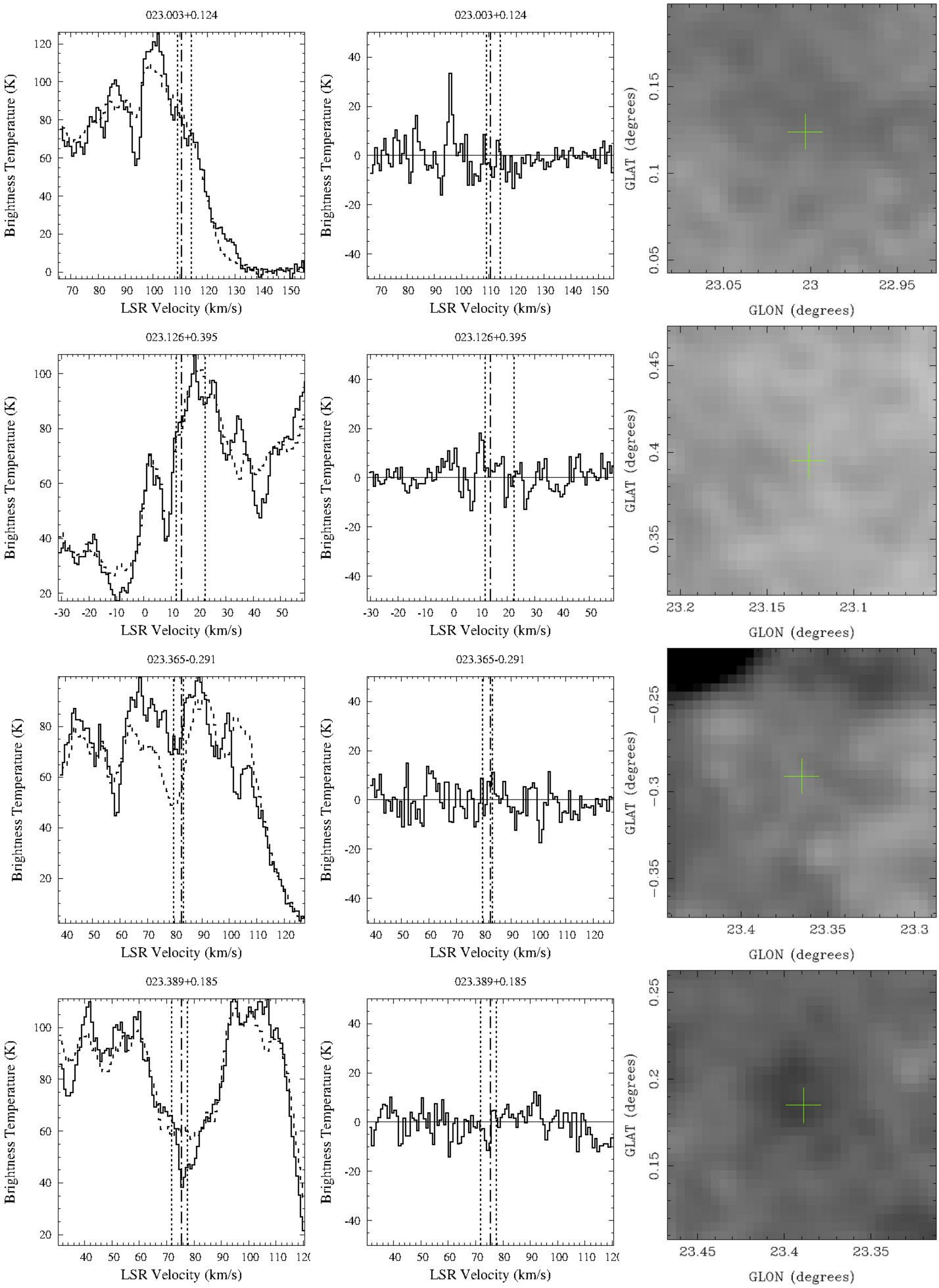

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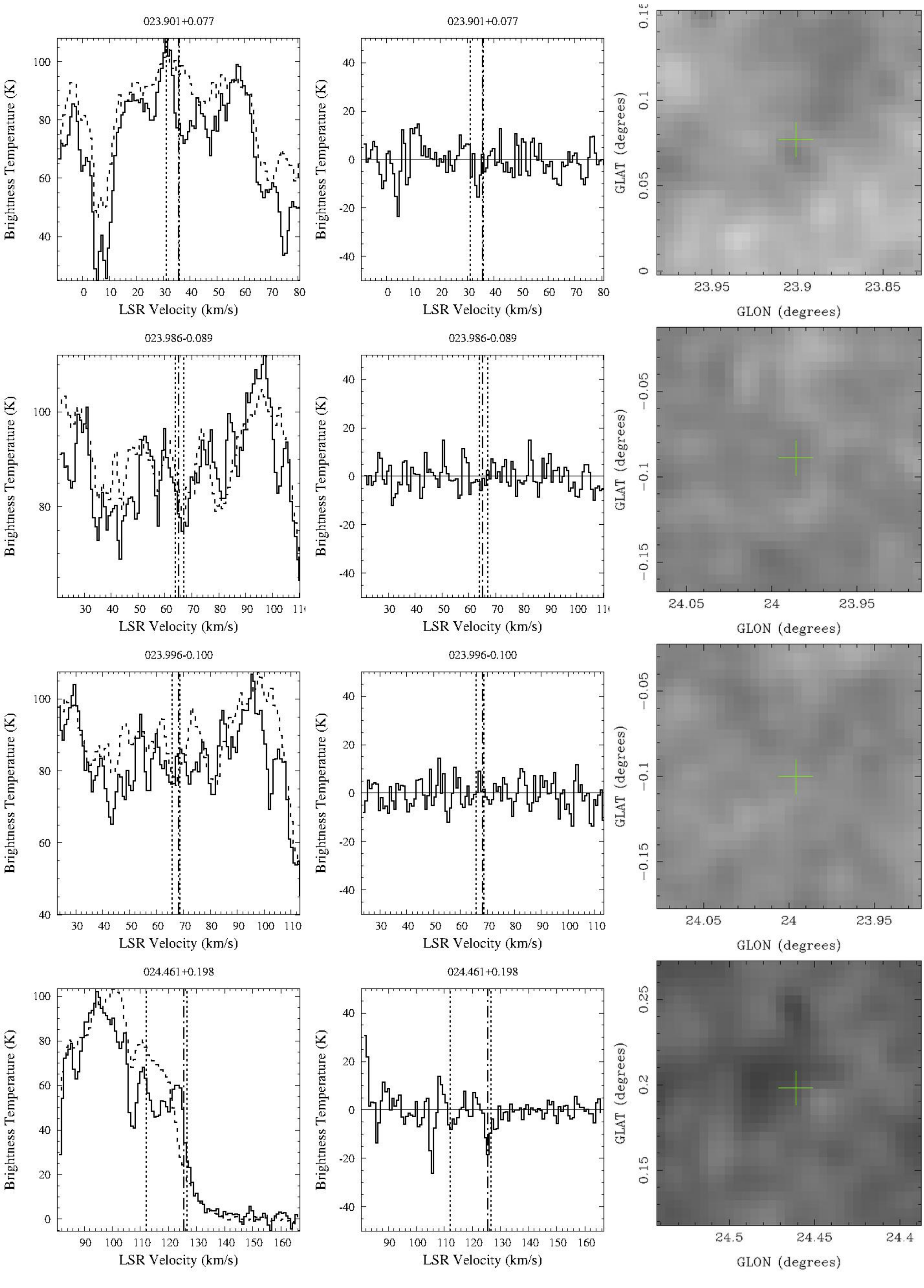

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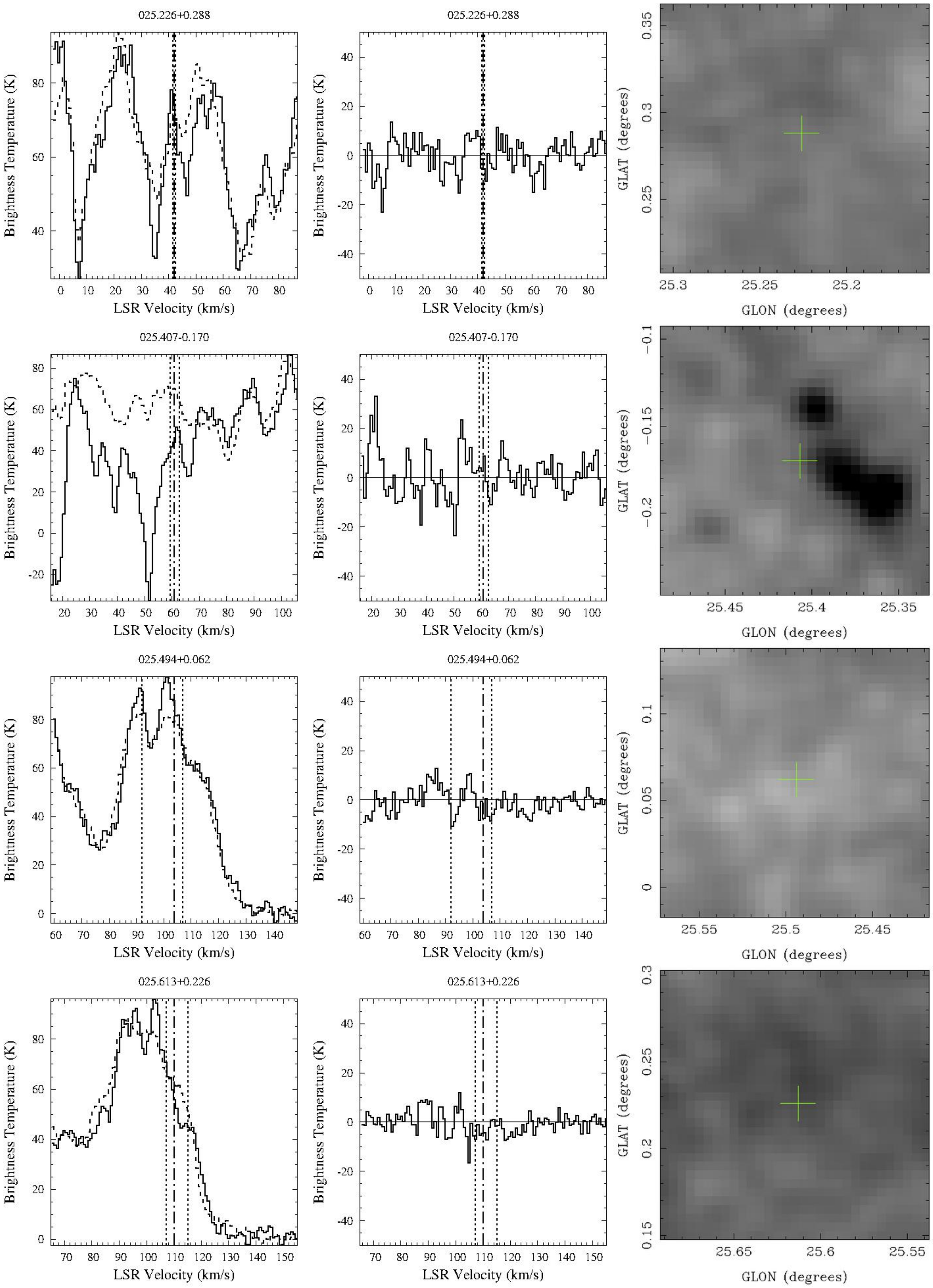

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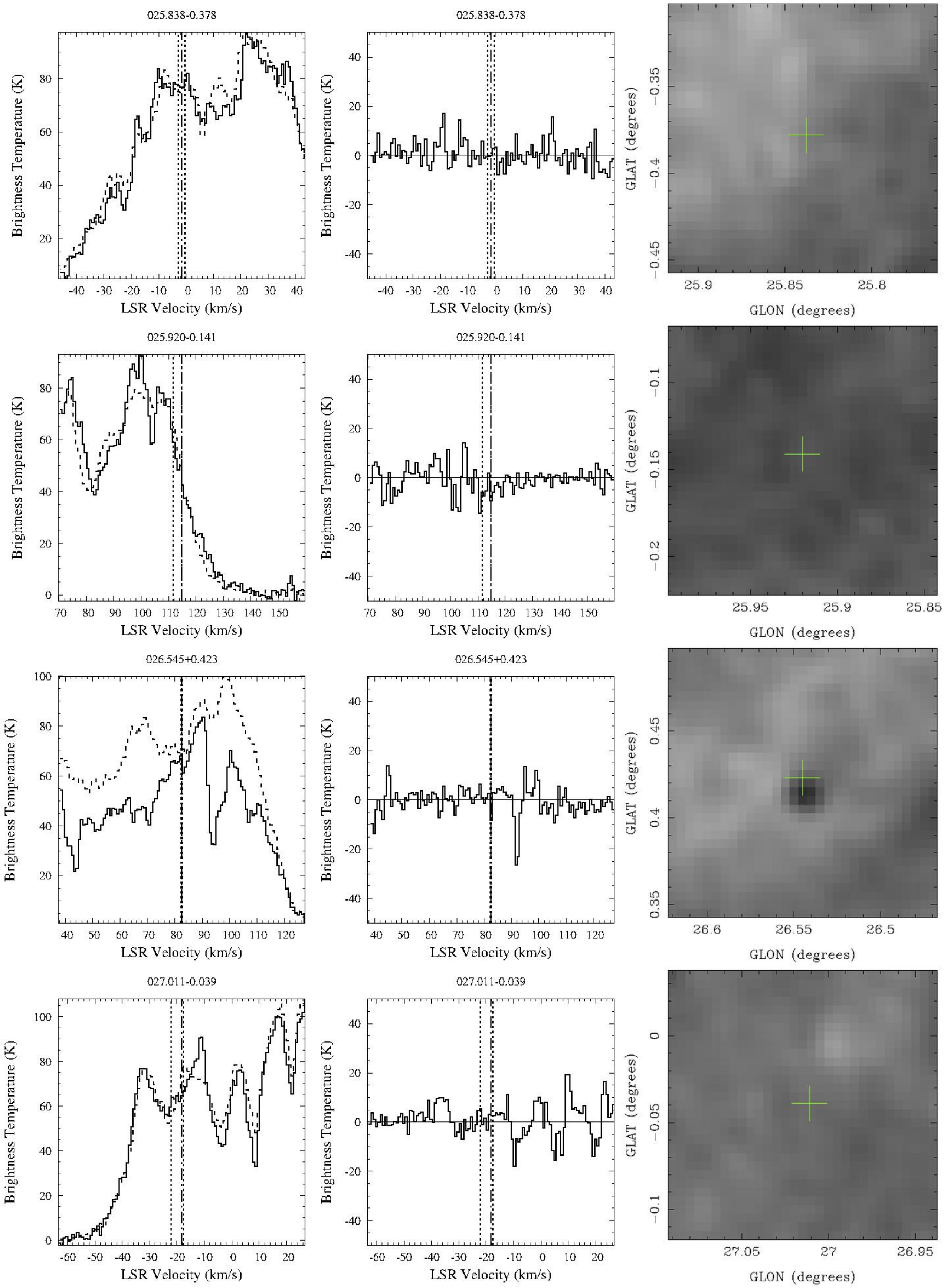

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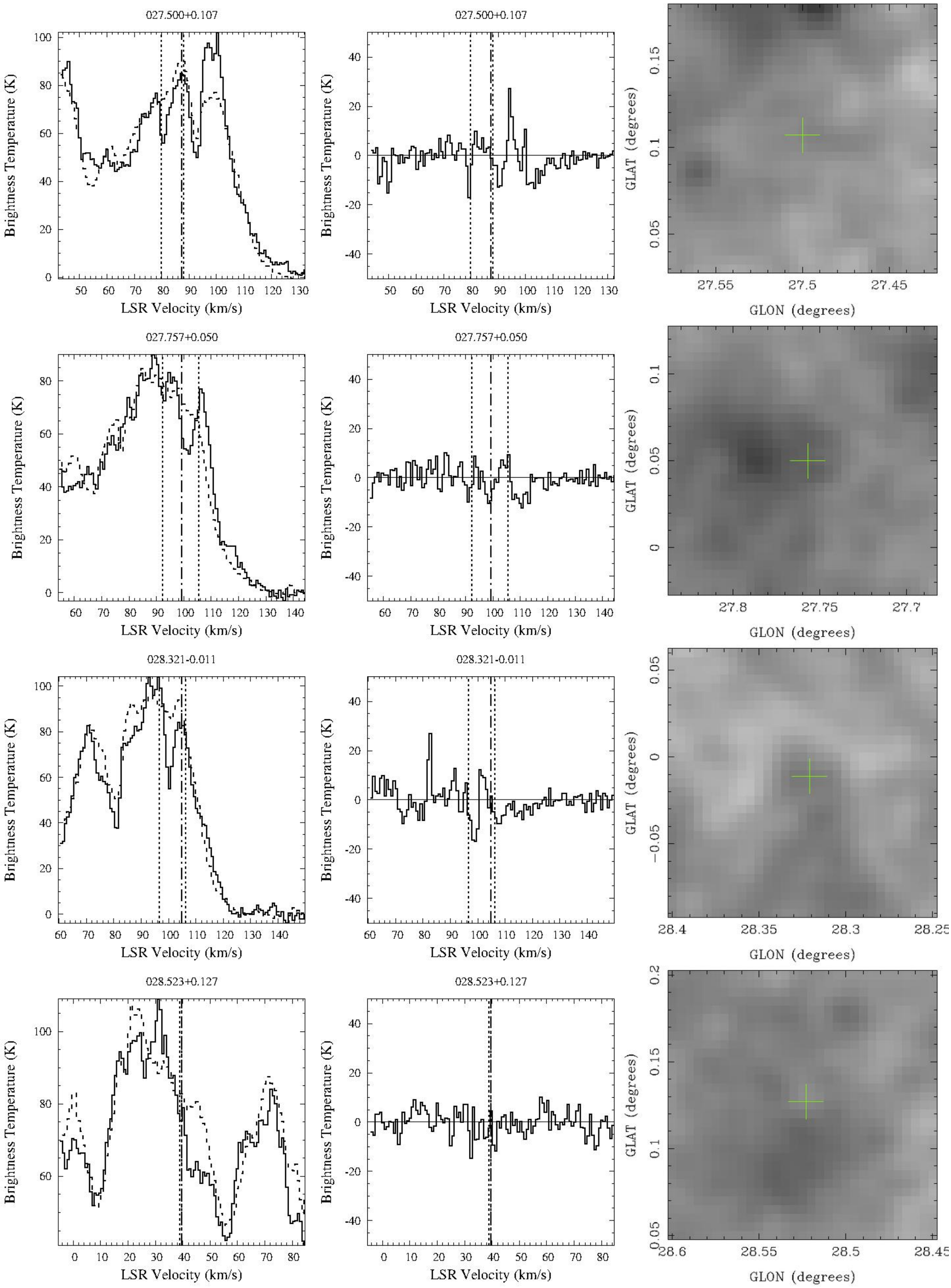

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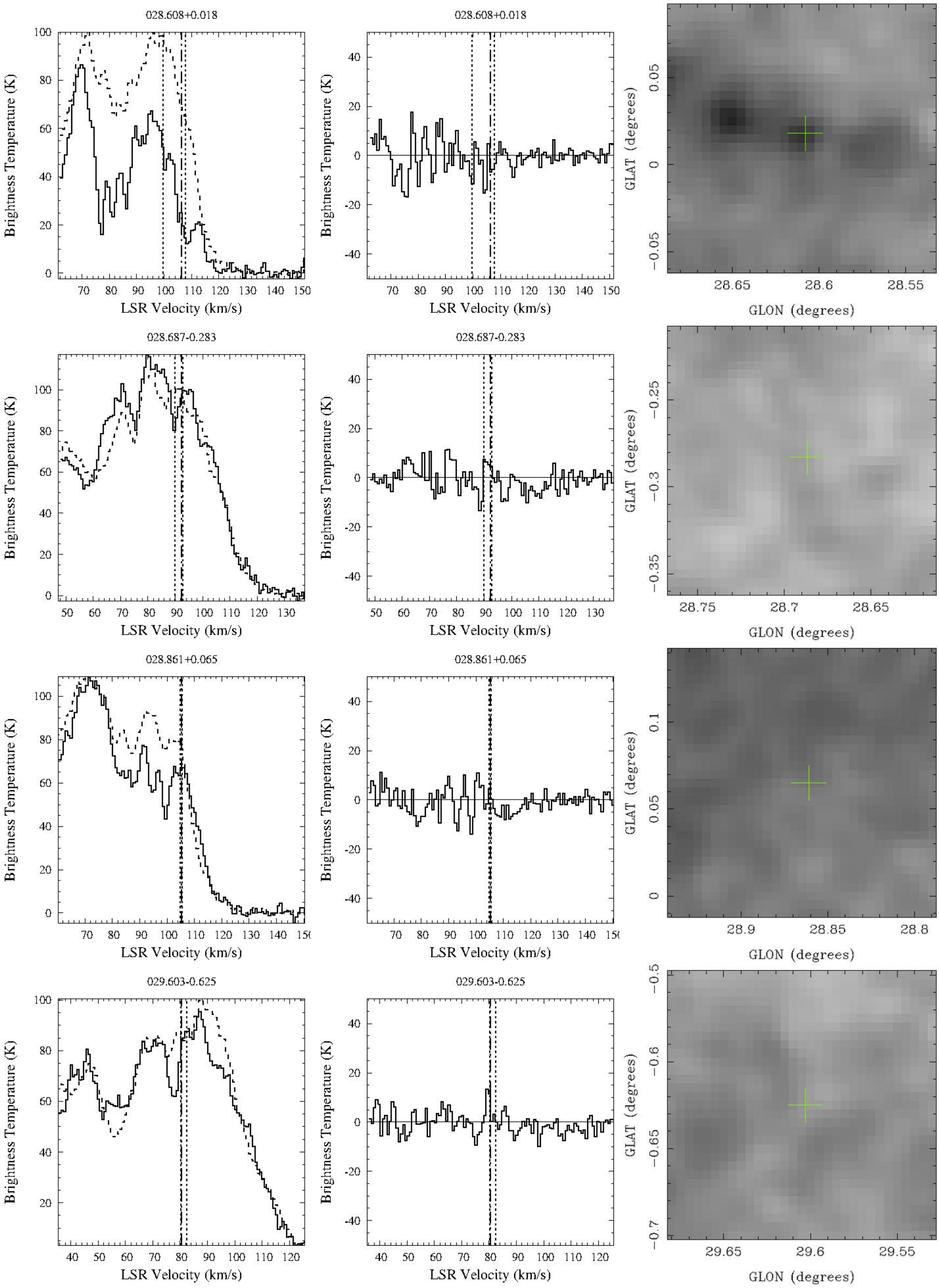

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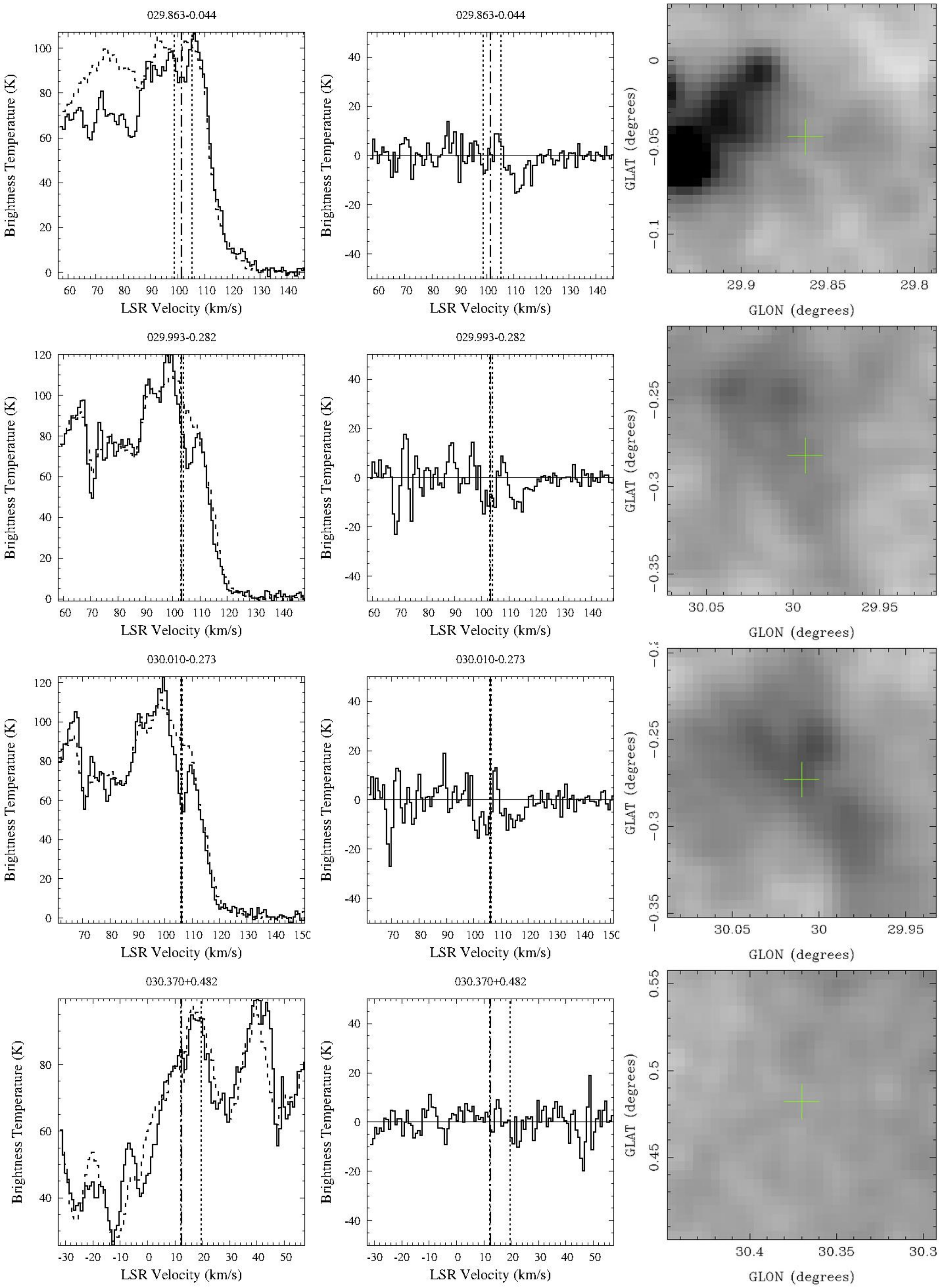

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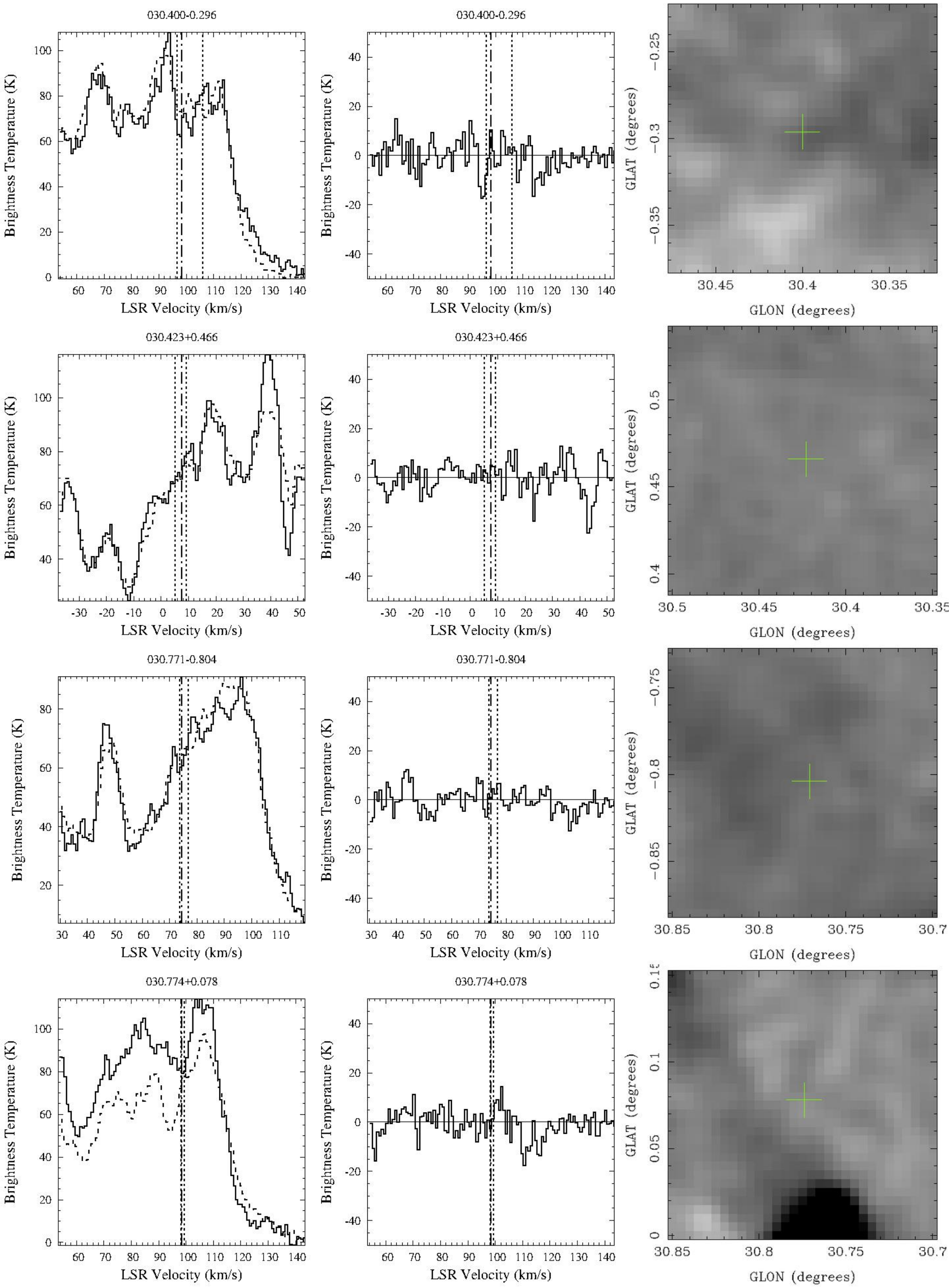

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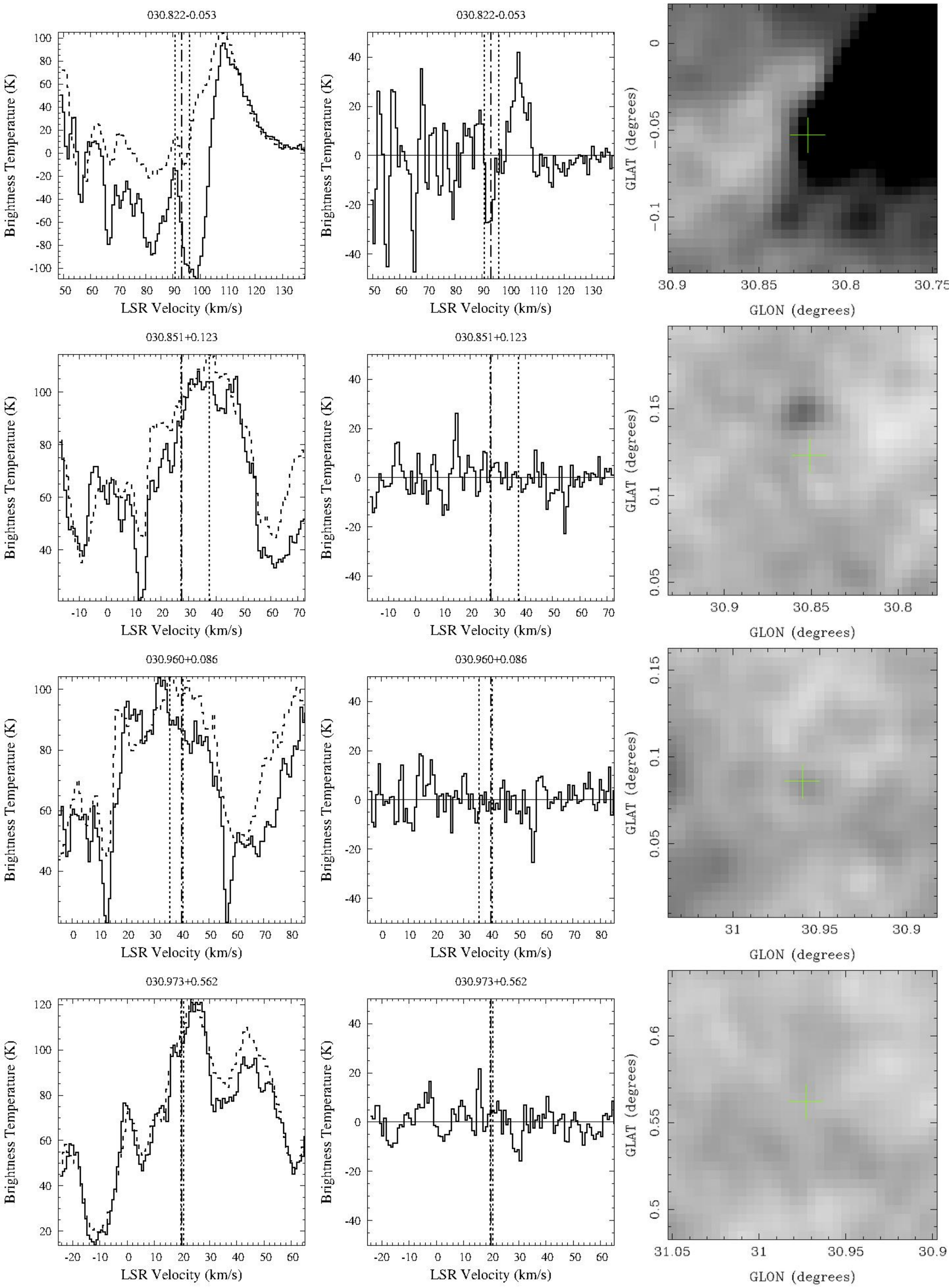

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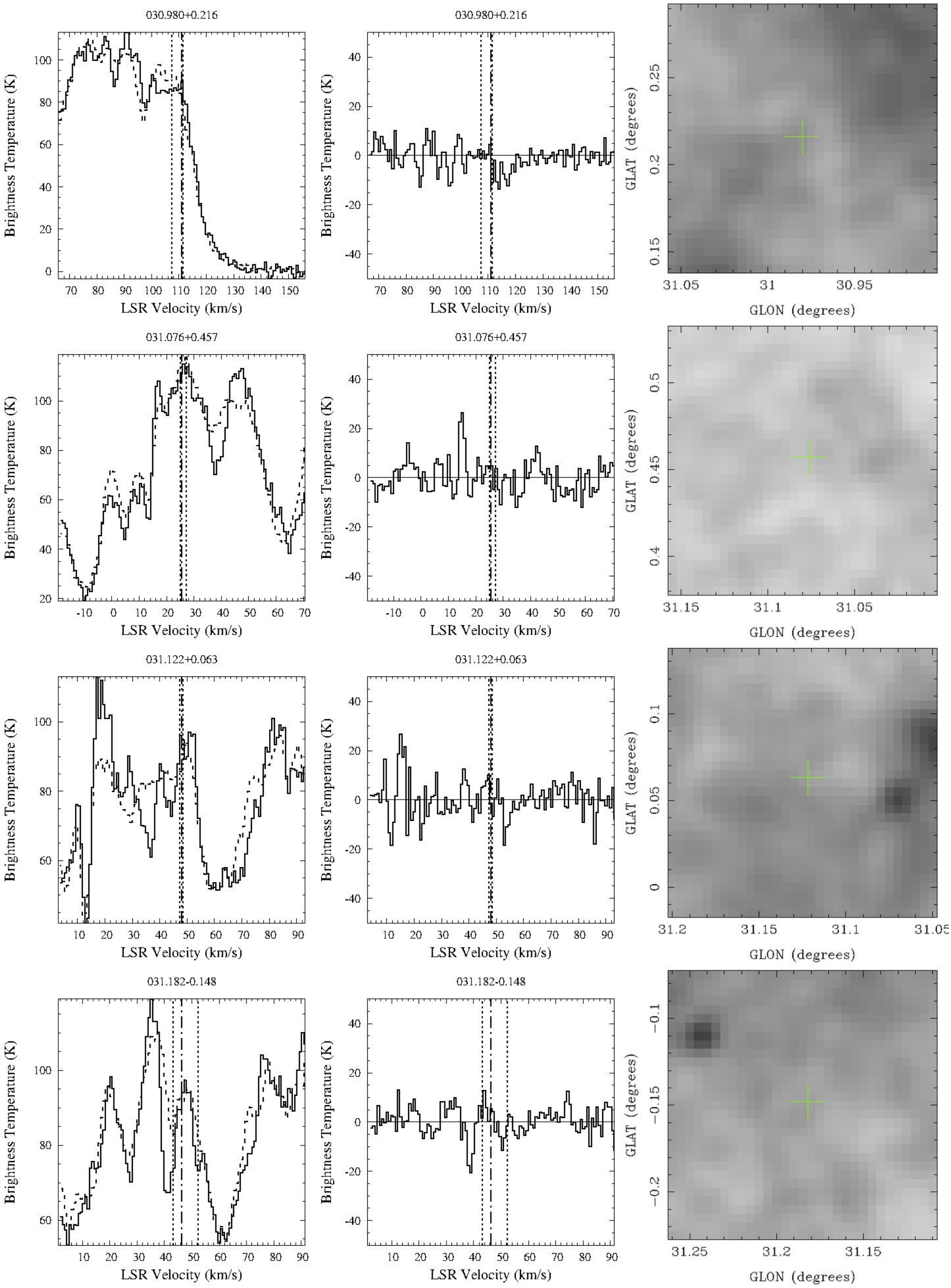

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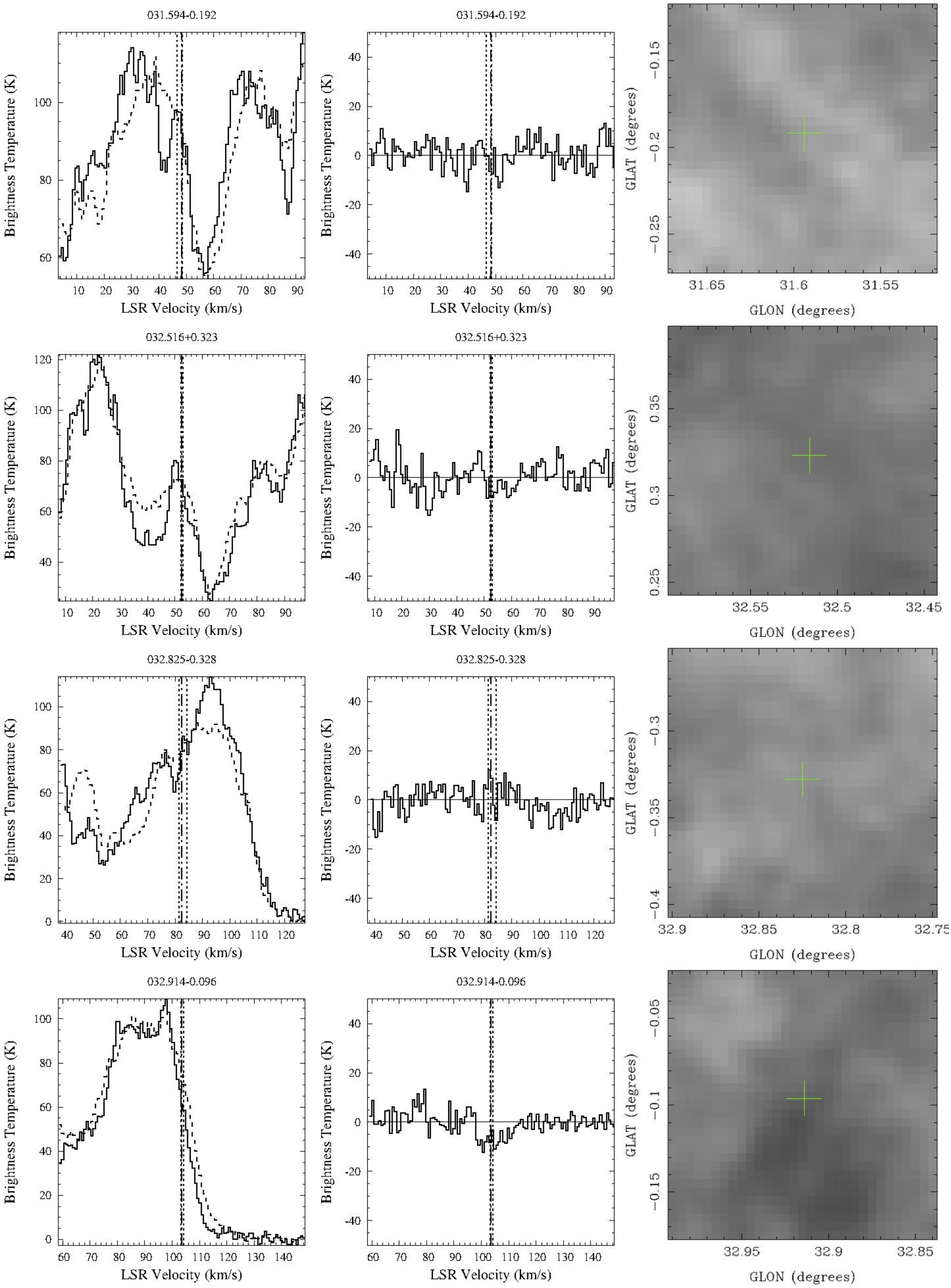

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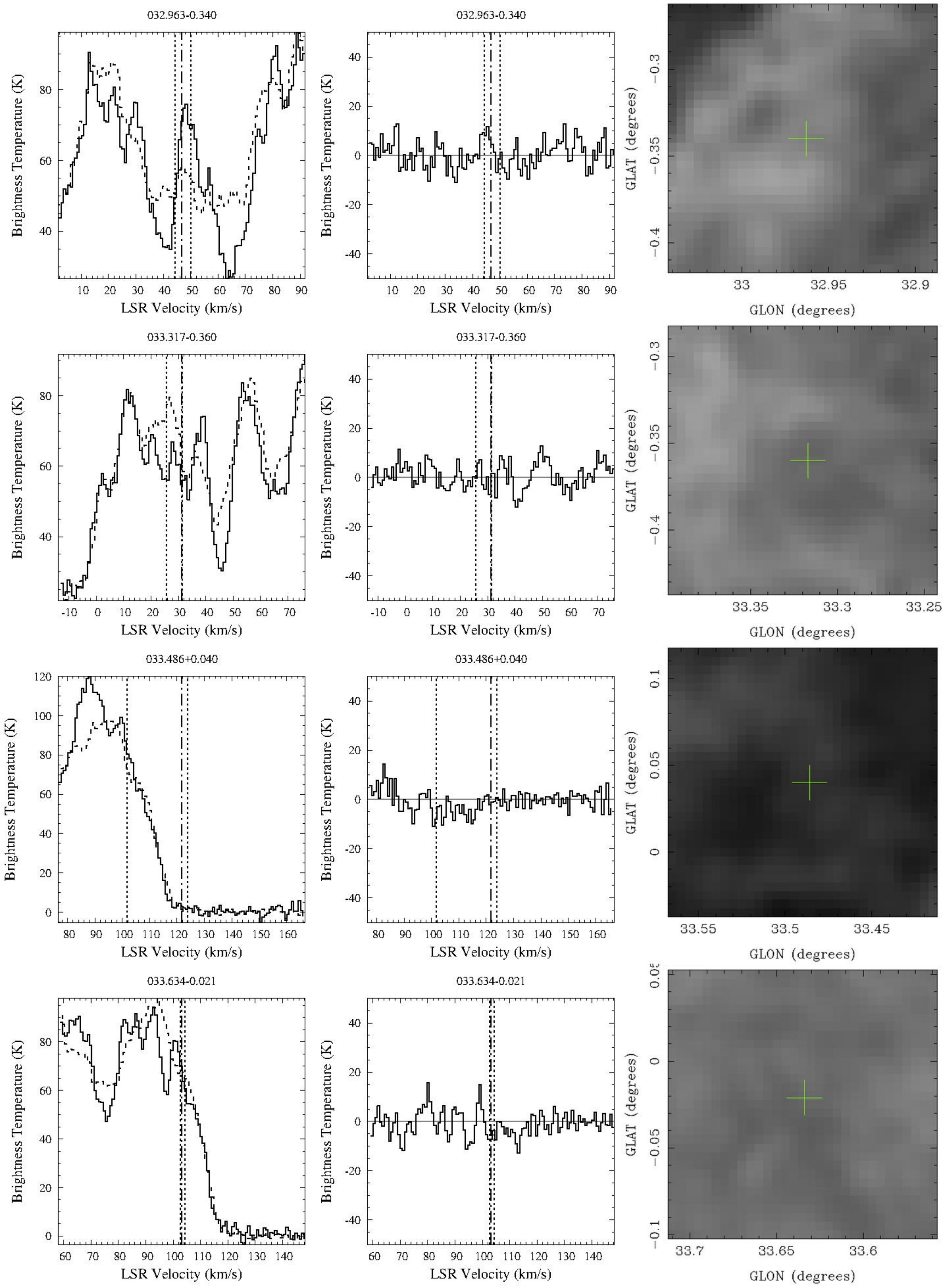

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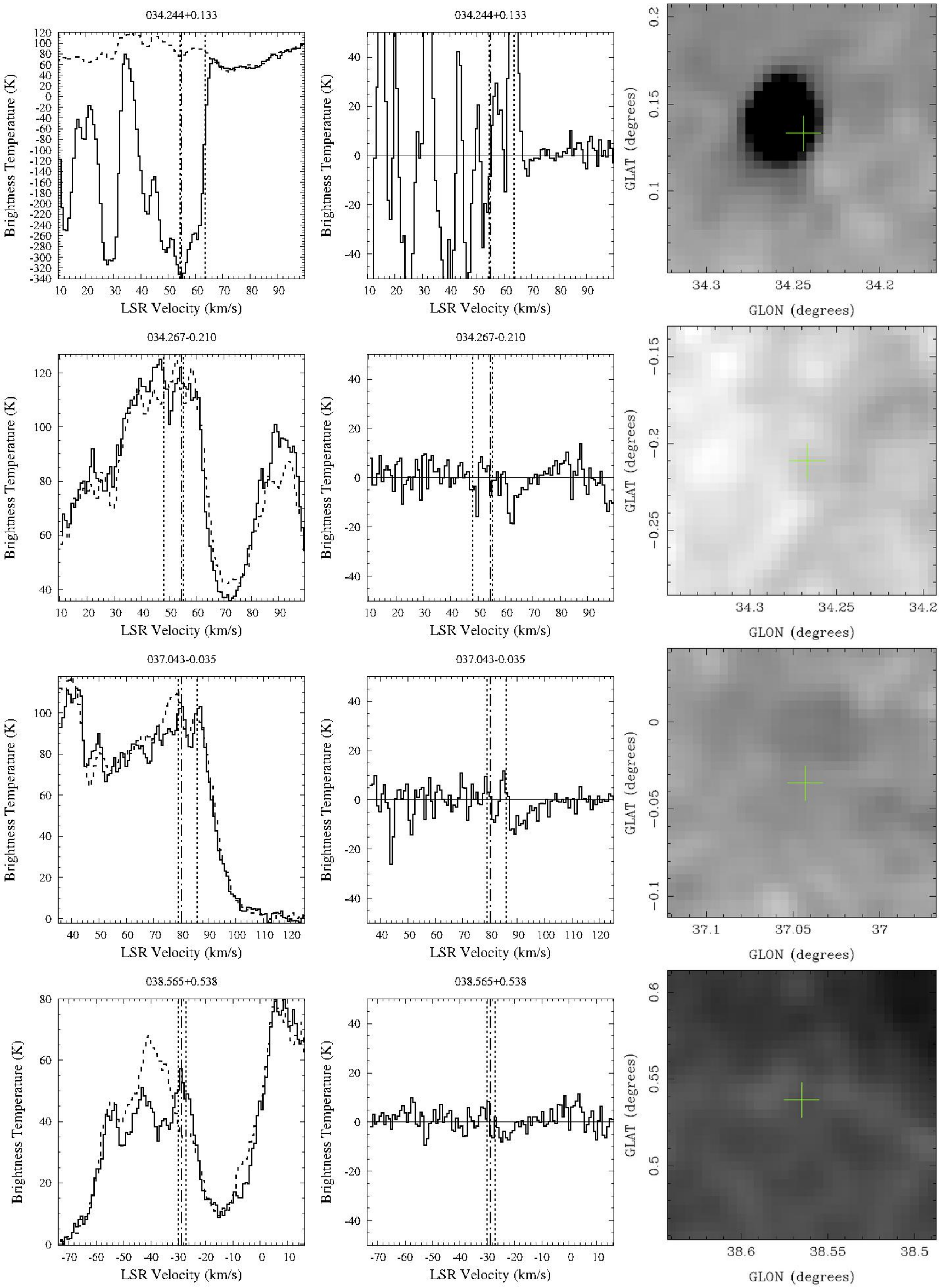

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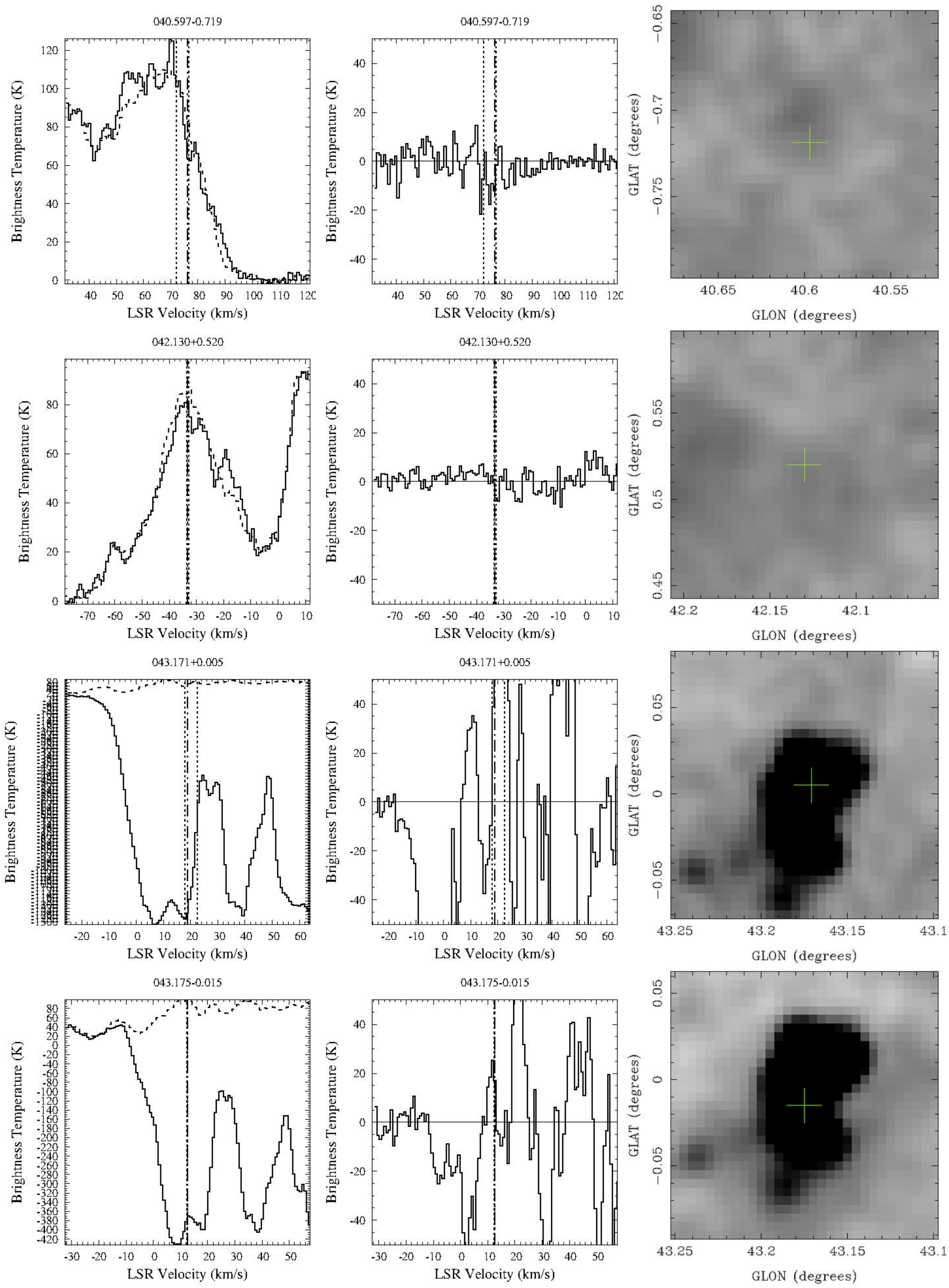

Figure A1. cont.

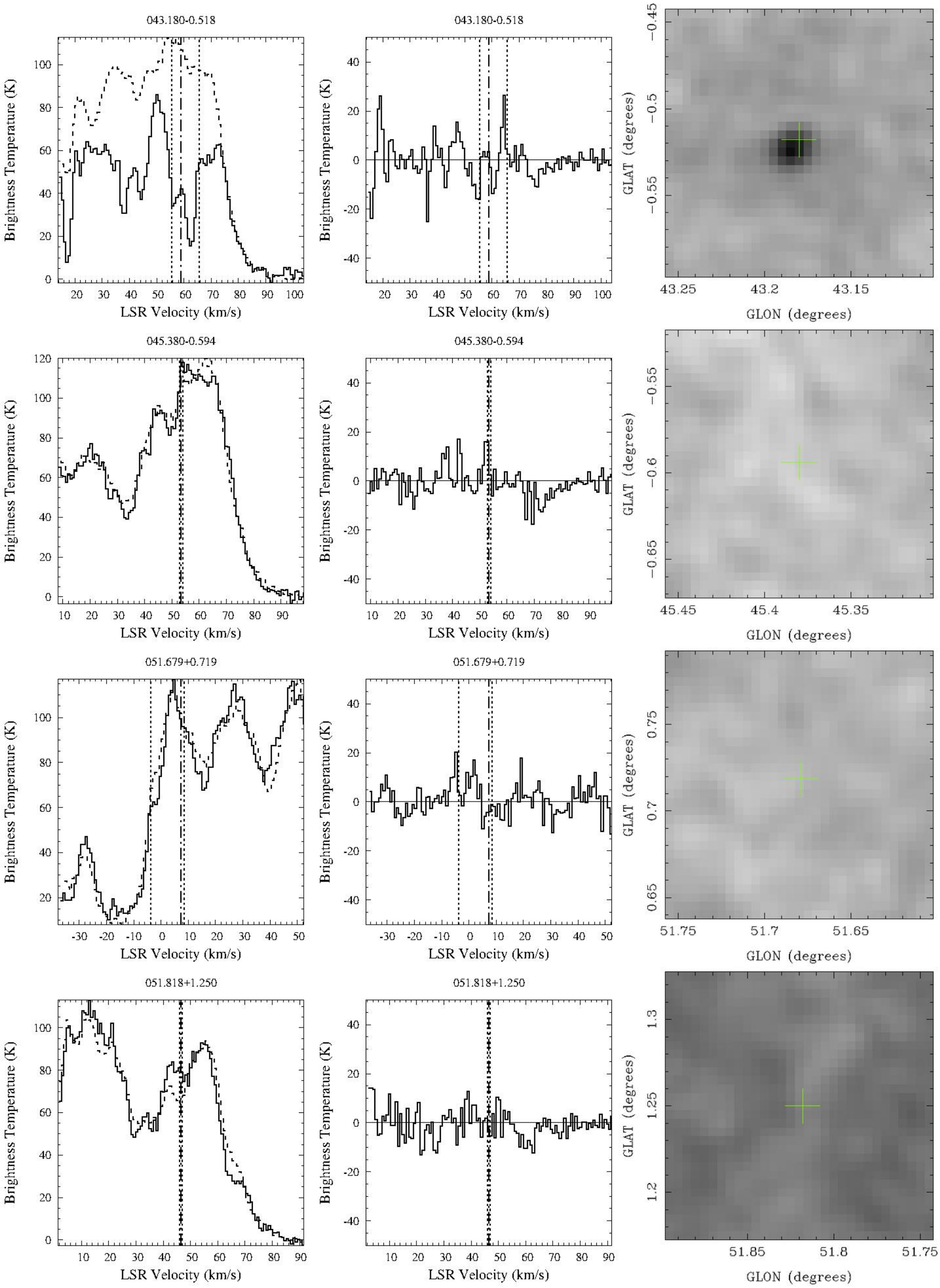

Figure A1. cont.

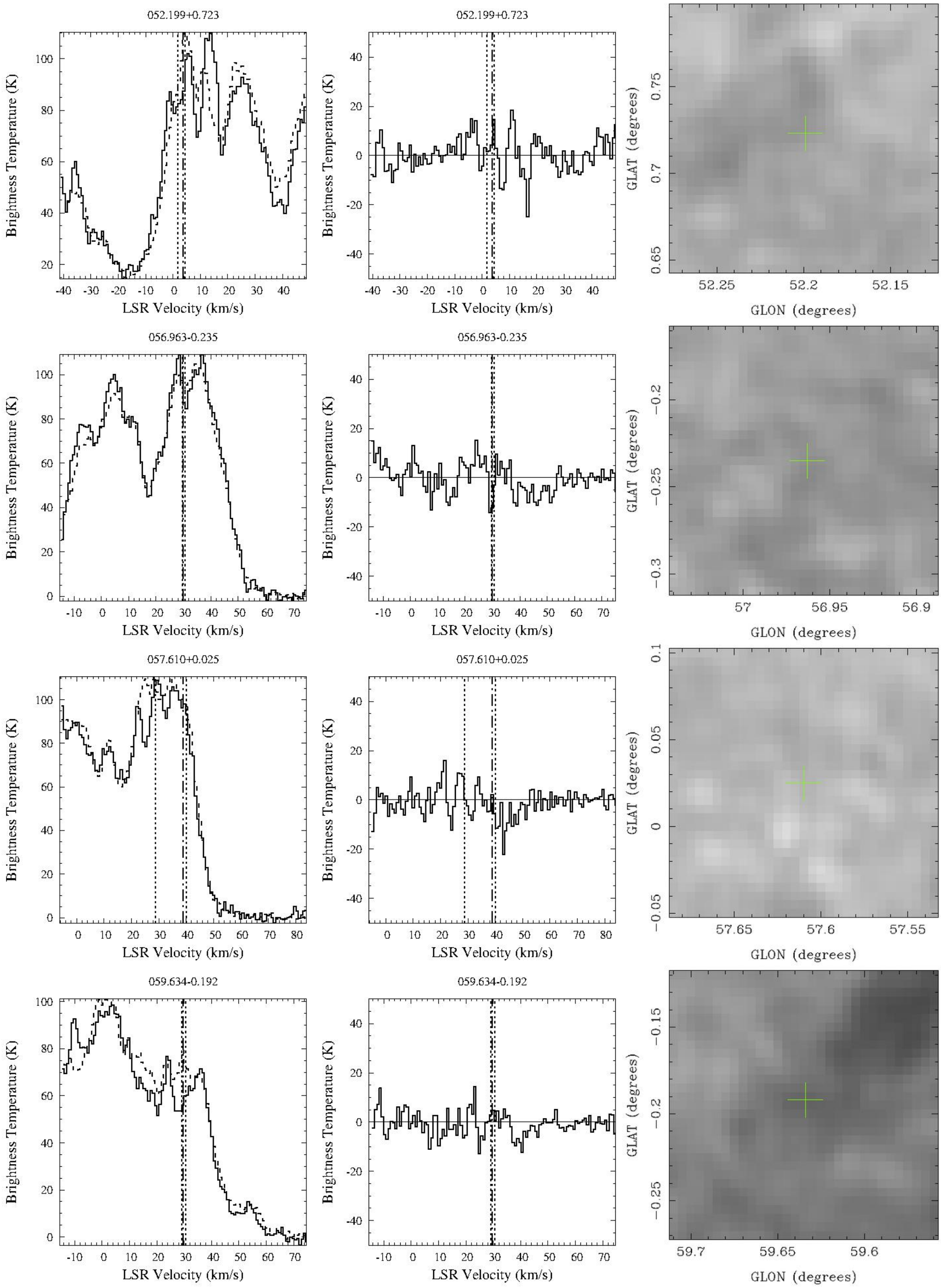

Figure A1. cont.